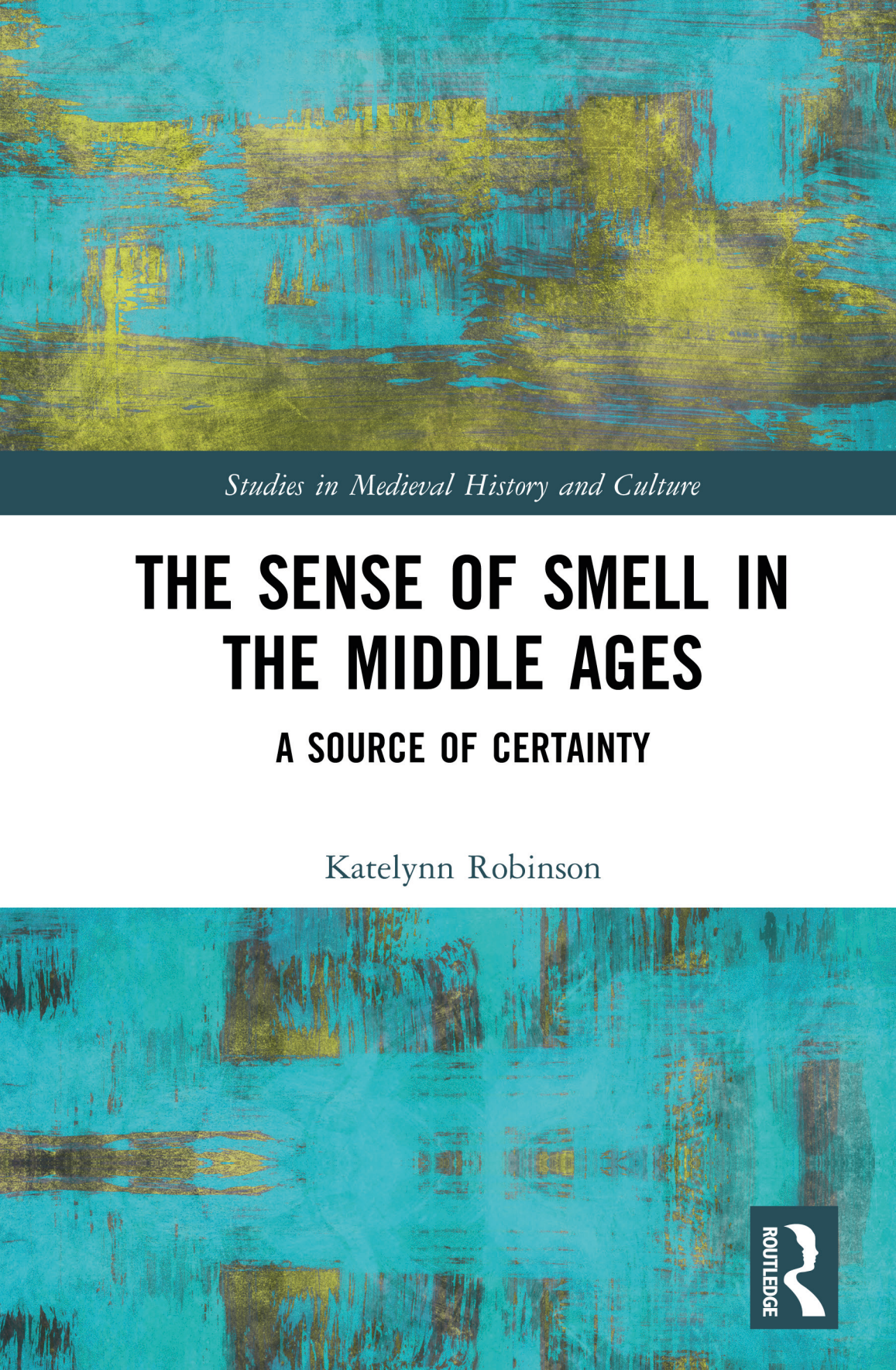




Studies in Medieval History and Culture

THE SENSE OF SMELL IN THE MIDDLE AGES

A SOURCE OF CERTAINTY

Katelynn Robinson

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The Sense of Smell in the Middle Ages

Odors, including those of incense, spices, cooking, and refuse, were both ubiquitous and meaningful in central and late medieval Western Europe. The significance of the sense of smell is evident in scholastic Latin texts, most of which are untranslated and unedited by modern scholars. Between the late eleventh and thirteenth century, medieval scholars developed a logical theory of the workings of the sense of smell based on Greek and Arabic learning. In the thirteenth through fifteenth century, medical authors detailed practical applications of smell theory and these were communicated to individuals and governing authorities by the medical profession in the interests of personal and public health. At the same time, religious authors read philosophical and medical texts and gave their information religious meaning. This reinterpretation of scholastic philosophy and medicine led to the development of what can be termed a medically aware theology of smell that was communicated to popular audiences alongside traditional olfactory theory in sermons. Its impact on popular thought is reflected in late medieval mystical texts. While the senses have received increasing scholarly attention in recent decades, this volume presents the first detailed research into the sense of smell in the later European Middle Ages.

Katelynn Robinson completed her PhD at the University of Missouri. Her current research focuses on the importance of the sense of smell in medieval culture.

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The Sense of Smell in the Middle Ages

A Source of Certainty

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List of abbreviations

Series

AGM	Archiv für Geschichte der Medizin
CCCM	Corpus Christianorum, Continuatio Mediaevalis
CCSL	Corpus Christianorum, Series Latina
EETS	Early English Text Society (o.s.: Original Series; e.s. Extra Series; s.s.: Supplementary Series)
PG	Patrologia cursus completus, Series Graeca, edited by J.-P. Migne. 161 vols. Paris: 1857–66.
PL	Patrologia cursus completus, Series Latina, edited by J.-P. Migne. 221 vols. Paris: 1844–58.

Frequently cited works

Albertus Magnus, <i>De homine</i>	Albertus Magnus. <i>Summa de creaturis, secunda pars, quae est de homine</i> , in <i>Opera Omnia</i> , Vol. 35, edited by Borgnet. Paris: Vives, 1894.
Aristotle, <i>De anima</i>	Aristotle. <i>De anima</i> (translatio “noua,” Iacobi Venetici translationis recensio). In Thomas Aquinas, <i>Opera Omnia</i> 45.1: <i>Sentencia libri de anima</i> , edited by R.-A. Gauthier. 3–258. Rome: Commissio Leonina, 1984. Aristoteles Latinus Database. Aristoteles Latinus 12.2.
Aristotle, <i>Meteorologica</i>	Aristotle. <i>Meteorologica</i> (vel <i>Metheora</i>). Edited by G. Vuillemin-Diem. 2008. Aristoteles Latinus Database. Aristoteles Latinus 10.2.2.
Aristotle, <i>De sensu</i>	Aristotle. <i>De sensu et sensato</i> (translatio “noua,” Anonymi saec. XII [siue “Nicolai”] translationis recensio). In Thomas Aquinas, <i>Opera Omnia</i> 45.2: <i>Sentencia libri de sensu et sensato</i> , edited by R.-A. Gauthier. 3–96. Rome: Commissio Leonina, 1985. Aristoteles Latinus Database. Aristoteles Latinus 13.2.

- Averroes, *Colliget* Averroes. *Colliget*. Venice: Juntas, 1562.
- Avicenna, *De anima* Avicenna. *Liber de anima seu sextus de naturalibus*. Edited by S. Van Riet and G. Verbeke. 2 vols. Leiden: Brill, 1972.
- Avicenna, *Canon* Avicenna. *Canon medicinae*. 2 vols. Venice: Juntas, 1595.
- Bartholomew, *De proprietatibus rerum* Bartholomew the Englishman. *De genuinis rerum coelestium, terrestrium et inferarum proprietatibus*. Frankfurt: Wolfgang Richter, 1601.
- Constantine, *Pantegni* Constantine the African. *Liber pantegni*. In Isaac Israeli, *Opera Omnia Ysaac*. Lyons: Trot, 1515. 1r–143v.
- Haly Abbas, *Liber regalis* Haly Abbas. *Liber totius medicine necessaria*. Lyons: Jacob Myt, 1523.
- Galen, *De instrumento odoratus* Galen. *De instrumento odoratus*. In *Claudii Galeni Opera Omnia*, Vol. 2, edited by K.G. Kühn, 857–86. Leipzig: C. Cnobloch, 1821.
- Galen, *De usu partium* Galen. *De usu partium*. In *Claudii Galeni Opera Omnia*, Vol. 3, edited by K.G. Kühn. Leipzig: C. Cnobloch, 1822.
- Galen, *On the Usefulness* Galen. *On the Usefulness of the Parts of the Body*. Vol. 1. Translated by Margaret Tallmadge May. Ithaca: Cornell University Press, 1968.
- Gilbert, *Compendium* Gilbert the Englishman. *Compendium medicinae*. Lyons: Portonaris, 1510.
- Guy de Chauliac, *Inventarium* Guy de Chauliac. *Inventarium sive Chirurgia magna*. Vol. 1. Edited by Michael R. McVaugh. New York: Brill, 1997.
- Isaac Israeli, *Liber dietarum universalium* Isaac Israeli. *Liber dietarum universalium*. In *Opera Omnia Ysaac*. 11r–152v. Lyons: Trot, 1515.
- Pietro d'Abano, *Conciliator* Pietro d'Abano. *Conciliator*. Venice: Juntas, 1565.
- Lawn, *PSQ* Lawn, Brian, ed. *The Prose Salernitan Questions*. London: Oxford University Press, 1979.

Divisions within historical works

In all notes, I abbreviate divisions in medieval texts with a Roman numeral for the largest section division (e.g., a part or book) and Arabic numerals for small section divisions (e.g., chapters) and page or folio numbers. All divisions larger than a page or folio are separated by a period and move from largest

division to smallest. Page and folio number follow a comma. For example, “Bartholomew, *De proprietatibus rerum*, V.13, 142” refers to book five, chapter thirteen, page 142. If a work includes only one type of division, I note it with the name of the division, e.g., “ch. 2” or “bk. 1,” followed by a comma and a page or folio number (if available). Modern volume numbers are marked separately and follow the rules of *The Chicago Manual of Style*.

Introduction

Why odor?

There were many wonderful accounts of the abilities and uses of odor in the Middle Ages. Church ritual was nearly inseparable from the fragrance of incense, which signified the presence of God, acted as sacrifice to him, and marked those touched by its odor as individuals under God's protection. Odors also supernaturally manifested from God and his chosen. The corpses of saints exhaled floral and spicy scents as proof of their holiness, and this odor, often compared to the odor of Christ's sacrifice, attracted devotees. The language of the Bible was filled with olfactory metaphors, including associating faithful Christians with the "good odor of Christ to God." Conversely, sin and demons exuded a stench that was repulsive to God. The fragrances of incense and balsam, an expensive scented ingredient used in baptismal oil, were such important religious symbols that they were still sought in Byzantium and places farther east even after the fall of Rome shrank trade routes and made eastern goods more difficult to obtain in Europe. Following the Crusades, spices became an increasingly integral part of European culture as they found uses in food, medicine, and perfume. The aroma of spices enticed merchants to travel to the Crusader States and beyond them as far as China and eventually (mis)led Columbus to the Americas. Good odors were not only pleasant but medicinal, used to purify indoor air quality and prevent disease. On the other hand, bad odors damaged air quality and could cause diseases such as leprosy and the plague.

Research on odors in the Middle Ages, particularly odors in religion, has shown promise. Martin Roch's work on odor in the early Middle Ages reinforces the significance of smelling to religious thought, as does Mary Thurlkill's comparative research on odors in Islam and early Christianity.¹ Both of these works owe a debt to Susan Ashbrook Harvey's influential study of odors in late antiquity as well as Béatrice Caseau's unpublished 1994 dissertation on the Christianization of odors from late antiquity to the early Middle Ages.² Furthermore, scholars including C.M. Woolgar, Paul Freedman, and Carole Rawcliffe have noted, to a greater or lesser extent, the importance of odors to medieval life and thought in studies of the senses, the spice trade, medicine, and urban cleanliness.³ These and other book- and article-length studies make it clear that odor and the sense of smell continued

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to be important after the early Middle Ages. Odors were an essential part of religion and daily life throughout the medieval period.

But why did odors do the things that the sources attribute to them with such frequency and certainty? How, for example, did medieval householders or doctors believe that an odor filling a room dispelled disease? How did a bad odor cause it? Medievalists have been less quick to address the question of olfactory theory. A handful of often-cited sources form the basis of current scholarly thinking about the medieval theory of the sense of smell. For religious thought, the main secondary sources are Harvey's *Scenting Salvation*, which ends in late antiquity, and Caseau's "*Euodia*," which extends only to c. 900. For philosophical and medical thought, two brief articles are typically cited: Richard Palmer's "In Bad Odour: Smell and its Significance in Medicine from Antiquity to the Seventeenth Century" (1993) and Simon Kemp's "A Medieval Controversy about Odor" (1997).⁴ Among more recent works, Woolgar's *The Senses in Late Medieval England* is often mentioned as an authority on medieval thought about and uses of smells. These secondary sources are sometimes supplemented with primary source research. A wide variety of hagiographies that mention the odor of sanctity or the stench of sin often back up Harvey and Caseau. Bartholomew the Englishman's *De proprietatibus rerum*, which has a readily available Middle English translation, is the most common resource for medieval European philosophical or medical theories of smelling. Aristotle, Plato, Galen, and Avicenna are also sometimes cited independently of Palmer's and Kemp's citations of them. These few texts, then, are the core of current thought about medieval olfactory theory, primarily because few authors set out with the purpose of explaining olfactory theory in detail. However, medieval smell theory is an ingredient vital to, or at least illuminating of, arguments in excellent studies of the spice trade, urban cleanliness, attitudes towards farting and excrement, leprosy, the importance of smells to surgery, religious sensory experience, and overall thought about the senses.⁵

A close examination of medieval sensory theory has already proven valuable for another sense: sight. Explorations of visual theory, including its development over time and the details of scholastic thinking, such as the controversy over the intromission and extramission theories of vision, not only provide a glimpse into scholastic thought but also illuminate medieval society and culture in a variety of ways.⁶ This is because scholastic sensory theory did not remain behind university walls. Art historians have profitably made use of the same discussion in considerations of how medieval people saw works of art and believed themselves to be affected by them.⁷ Various aspects of scholastic thought, sensory and otherwise, have also been usefully applied in literary criticism.⁸

Olfactory theory proves similarly productive. There were medieval answers to the questions of why and how odor acted as it was believed to act, especially after wars and conquests in the Holy Land and Muslim-ruled Spain and Sicily in the late eleventh century increased not only the range of scented materials

but also the variety of books discussing odor available to Latin Europe. Works of philosophy and medicine that were originally written in Greek or Arabic were translated and quickly absorbed into Latin-language philosophy about the senses and the human body in general. While translations began in the late eleventh century, new works continued to be translated from Greek and Arabic throughout the medieval period. These texts did not merely add to the store of knowledge about olfaction; rather, they required interpretation and integration with current medieval thought and all earlier texts. Between c. 1100 and the end of the Middle Ages, scholastic olfactory theory developed from these works. Scholars outlined a basic theory and rational justifications for the use of odor in and as medicine, which included a firm belief in the importance of considering smells in urban cleanliness and household management. Theologians also added the new scholastic smell theory to traditional olfactory theology to reinforce the ability of odors to express divinity or evil. Furthermore, medicine and religion ensured that a certain amount of scholastic olfactory theory reached average people, and this knowledge is reflected in urban legislation, sermons, and literature.

The medieval theory of the sense of smell began—but did not end—as a synthesis of Greek and Arabic thought on olfaction. Part 1, “The anatomy and physiology of olfaction,” is devoted to the background and development of medieval olfactory theory. The first chapter provides a summary of some important Greek and Arabic-language philosophical and medical overviews of the sense of smell. The texts of Plato, Aristotle, and Galen include information on the nature of odor, the types of odors, the anatomy and physiology of smelling, and some of the powers of odors on the human body. All Greek thinkers agreed that odors had important effects on the human body: most fundamentally, good odors aided health while bad ones harmed it. Aristotle claimed that odors were especially good (or bad) for the human brain. Galen built on that assertion, even identifying the true olfactory organs within the brain rather than the nose. Odor itself was, however, difficult to define. Plato had considered it something between water and air, while Aristotle argued firmly that it was closer to fire and air, and Galen attributed many different elemental qualities to odors. Aristotle also considered odors to be related to flavors, since some odors corresponded to certain flavors. However, what humans sensed of odors was not, according to the Philosopher, the physical odor but rather immaterial sensory information that separated from the material odor to affect our sense organ. Galen, on the other hand, wrote as if all odors were physical, because their physical nature was essential to the medical use of different odors in balancing the brain and other parts of the body through their various qualities of heat, cold, dryness, or moisture, which were essential traits of both medicines and the human body in Galen’s medicine.

Greek thought was not only a central element of scholastic science but had a strong influence on Arabic-language authors. Latin translations of Arabic texts, especially medical texts, were the first sources that summarized the workings of the senses for central medieval scholastic authors. The earliest

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texts remained authoritative even as later texts fed the growth of scholastic olfactory theory and became similarly essential to medieval thought. I outline the theories of Isaac Israeli, Avicenna, Averroes, Haly Abbas, and Constantine the African, all of whom are frequently cited in European overviews of the sense of smell. Most of these authors wrote medical texts heavily influenced by Galenic medicine. However, many authors also incorporated aspects of Aristotelian thought into their discussion of olfaction. Avicenna, who wrote both a philosophical and a medical work that influenced scholastic theory, is especially important for indicating a path to reconciling Galen and Aristotle to scholastic authors. Conversely, Averroes's olfactory theory, which attempted to be more Aristotelian than Galenic, largely attracted scorn from medieval authors writing about smelling.

Chapter 2 traces how twelfth- through fifteenth-century European scholars adopted and adapted the theories they found in Aristotle and Galen and in sources from the Muslim world as they articulated the medieval standard account of olfaction, which is first found in its fullest expression in Albertus Magnus's thirteenth-century *De homine*. While twelfth-century authors such as William of St.-Thierry generally adopted the theory found in Constantine the African's eleventh-century translation of Haly Abbas, the *Pantegni*, with little or no alteration, the thirteenth-century scholars Albertus Magnus, Vincent of Beauvais, and Bartholomew the Englishman combined the *Pantegni* with newly translated works of Aristotle and Arabic authors. Thirteenth-century scholars reconciled Galenic-Arabic olfactory theory with Aristotelian discussions of olfaction, and they did so along the pathway laid out by Arabic authors, particularly Avicenna. Briefly, the medieval standard account of olfaction identified two breast- or nipple-like bodies at the top of the nasal passages, which extended directly from the brain, as the sense organs of smell. (These sense organs may or may not have aligned with the olfactory bulbs located near the nasal passages, which modern science identifies as the main organs of smelling.) The olfactory breasts sensed two basic types of odors: good and bad. Good odors were important to the health of the brain and body, while bad odors could induce illness. Humans sensed odors relatively weakly, but they could still classify them on the basis of their similarity to flavors. Odor was formed physically from particles that separated from an odorous object and traveled through the air until it was drawn into the brain with the breath. While the brain only sensed the immaterial species (or sensory information), the matter of odor was important to its healing and harming qualities. In the fourteenth and fifteenth centuries, this basic outline of olfaction did not change. Scholars did slightly change their emphasis in overviews of olfaction so that the sense of smell aligned a little more closely with Aristotelian discussions of the senses, particularly by exploring the abilities of the immaterial species of odor rather than its material powers. Belief in the material effects of odor were, however, still very much in evidence in practical uses of odors.

The medical uses of odor are the topic of Part 2, "The powers of odors." Chapter 3 reviews the many applications of smell theory in medical practice.

Like its Greek and Arabic-language sources, medieval medicine held that odors were generally beneficial to the health of the body, in particular the spirits of the heart. The key to understanding this and every power of odor is the nature of odor as a fume or vapor. The most basic definition of odor as a hot, dry fume highlighted the similarity between odor and the body's spirits. The spirits were fume-like substances, termed *pneuma* by Galen and *spiritus* in Latin, that circulated throughout the body to support functions such as movement and sense perception. Odors could affect the health of the brain and the entire body through their effects on the spirits. Good odors not only pleased the spirits but nourished and strengthened them through their similar natures and the principle of like nourishing like. The similarity between flavor and odor was also an important factor in odor's nourishing power, an ability that Aristotle denied to odor but that Arabic and European authors firmly supported. Conversely, the spirits were disgusted by and fled from bad odor. If a bad odor was in contact with the spirits for too long, it harmed them and caused illness in the body because of its extreme variation from the natural and healthy hot and dry qualities of the ideal odor.

In addition to the foundational Greek and Arabic texts, Chapter 3 examines works of scholastic theory, medicine, and surgery such as Bartholomew the Englishman's encyclopedia, the *Trotula*, the *Prose Salernitan Questions*, and Guy de Chauliac's surgical manual to elucidate olfactory theory. I examine the uses of odor in judging medicines, in diagnosis and treatment of illnesses, and in general maintenance of health. Medical practitioners implemented known qualities of odors, specifically those that were similar to flavors, to judge the qualities of medicines and diagnose illnesses. The similarities between odors and flavors were useful for these purposes because certain flavors and flavor-like odors carried specific qualities of heat, cold, dryness, and moisture that university-educated doctors or surgeons had memorized on the basis of their descriptions in medical texts such as Avicenna's *Canon*. The primary differentiation of odor into good and bad was also an essential tool of diagnosis. Bad or unnatural odor always signified corruption, whether in a medicine or a human body.

In Chapter 4, I discuss one way that scholastic smell theory reached popular audiences: through urban regulations regarding cleanliness and public health, particularly during and after the pestilence that first struck Europe in 1348. The corrupt air theory, which explains the origin and spread of epidemic disease, is near-identical to the explanations of how bad odors are generated and how they affect the body. From the perspective of olfactory theory, causing epidemic disease was merely one power of odor, and it was prevented and treated in similar ways as other illnesses caused by odors. Following scholastic medical logic, cities used the corrupt air theory to maintain public health before and after the Black Death. Because, as Dolly Jørgensen has shown, maintaining a clean city was a cooperative effort between civic authorities and residents, urban dwellers likely already had some familiarity with the corrupt air theory, especially the importance of avoiding stench, even before the plague arrived.⁹ Beginning in the thirteenth century, the actions of cities

to apply corrupt air theory are evident in the proliferation of laws aimed at preventing stench. Regulations against bad odor became increasingly common over the course of the first half of the fourteenth century. When the plague arrived in 1348, prevention of pestilence became a matter of immediate concern for every individual in Europe. Plague tracts written from 1348 until the end of the Middle Ages consistently recommend the use of air-purifying fires, pomanders, and other materials intended to rectify air quality and strengthen the spirits of the body by removing bad odor. Popular acceptance of the role of bad odors in causing disease and good odor in preventing it are evident in applications of odorous substances in cities and in reflections of those applications in sermons and vernacular literature.

Scholastic theories of smell also filtered into theology, and this is the concern of Part 3, “The spiritual sense of smell.” A well-developed Christian theology of olfaction existed long before Arabic texts entered medieval Europe. That theory already included some of the elements necessary to fuse it with later medieval scholastic smell theory, particularly an interest in the nose as sense organ separate from odor, the sense object. Chapter 5 outlines the theology of odor and the spiritual nose up to about 1200. I review the findings of Harvey on smell in late antique Christianity and Roch on smell in the early Middle Ages and cite examples of what I consider to be the essential types of spiritual odor: the odor of sanctity, the stench of sin, and the subtypes the odors of good or bad works or reputations, of martyrdom, and of virtue. Harvey’s late antique “paradigms” of incense (as sacrifice to God) and perfume (what the aroma of a person communicates about the state of his or her soul) are particularly useful in considering the meaning of spiritual odors in the Middle Ages.¹⁰ When the odor of sanctity or stench of sin refers to divine or demonic presence, it belongs to the paradigm of perfume. The aromas of good and bad fame are also varieties of spiritual perfume, because they indicate the nature of a person’s soul. The odors of good or bad works and the fragrance of martyrdom derive from the paradigm of incense sacrifice. The role of all of these spiritual odors is to identify a person, place, object, or spirit as aligned either with God and goodness or with the Devil and sinfulness. Spiritual odors were quite commonly included in works of all genres and for all audiences to briefly communicate the identities of things.

The spiritual nose has received less scholarly attention than spiritual odor. There was already some overlap between philosophical and religious ideas about the sense of smell in early Christian times. The primary and simplest definition of the abilities of the nose was that it distinguished between good and bad odors. Early Christian authors pointed to the similarity between the physical nose that smelled good and bad odors and the spiritual nose that distinguished between the good odor of sanctity and the evil stench of sin.¹¹ The most common discussion of the spiritual nose in the early and central Middle Ages derived from Gregory the Great’s explication of Sg 7:4, “Your nose is like the tower of Lebanon that looks towards Damascus,” as the discretion of the Bride of Christ, explaining the analogy with reference to the

physical nose's perception of good and bad odors. Late medieval authors called this sense the "nose" or "sense of smell of discretion," *nares* or *odoratus discretionis*, signifying that the spiritual purpose of smell was to distinguish between the two types of spiritual odors. Early and central medieval authors repeated Gregory's explications in commentaries on the Song of Songs. In the twelfth century, the now-standard exegesis of Sg 7:4 began to move out of biblical commentary and into other theological texts. Thus, by about 1200, the traditional theology of smell included both the sense organ and its objects.

The last chapter explains the links between the philosophical and medical theories of smell and their counterparts in theology and demonstrates how these theological concepts moved into the popular realm. Many of the same authors who wrote on the physical process of smelling without reference to religion incorporated some philosophical ideas into theological texts. Furthermore, the content of more approachable texts such as Bartholomew the Englishman's encyclopedia was given spiritual interpretation and included in sermons and preaching exempla. The exempla collection of the Benedictine Pierre Bersuire in *Reductorium morale* is one example that had a wide distribution during the medieval period. Preaching resources allowed priests to communicate scholastic information about the sense of smell and the nature and powers of odor to popular audiences. Non-Latinate audiences might have learned some of this medically aware theology of smell outside of sermons, such as by reading vernacular texts and in conversations with scholars. However, preaching texts provide a more certain path of dissemination. Finally, vernacular mystical texts demonstrate that non-Latinate audiences both understood what they heard in sermons and used the same concepts in their own devotional thought. The medically aware theology of smell was put to use in texts by mystics such as Catherine of Siena and communicated to vernacular readers in the initial language in which they were written and frequently in others that the works were later translated into.

Medieval olfactory theory is a complex and surprisingly pervasive topic. By the end of this book, it should be clear that smell theory not only touches on but is vital to medieval understandings of the environment and the health of the human body as well as the spiritual equivalents of both. Although early medieval thought had little to say about physical olfaction aside from a general assertion that the nose differentiated between good and bad odors, the twelfth-century translations of Arabic-language medical and philosophical texts such as Constantine the African's *Pantegni* brought sophisticated theories of olfaction into Europe. While it originated in Greek philosophy and medicine, the olfactory theory received by medieval scholastics had been modified and absorbed into Arabic medical theory. Scholars of natural philosophy and medicine had thoroughly digested the content of these texts by the mid-thirteenth century and began to put it to use in exploring the nature of the world and humanity. Theories of smell were given practical applications by medical practitioners, for whom odors were important tools of diagnosis and treatment as well as possible sources of illness. At the same time, authors

of theological works, often the same authors who had written on the philosophy and medicine of smelling, adapted traditional Christian olfactory theology to include many elements of scholastic olfaction.

Furthermore, scholastic thinking on smell influenced popular thought within and outside religious contexts. Scholastic medical thought was particularly important to late medieval European cities for controlling the spread of disease before and especially after the arrival of the plague in 1348. Likewise, late medieval sermons preached spiritualized versions of philosophical and medical belief regarding the sense organs in the brain, the nature and powers of odors, and the specific details of the medical abilities of certain aromatics. That these theories were understood by popular audiences is reflected in vernacular mystical texts, many of which demonstrate the author's knowledge of one or several aspects of the spiritual sense of smell as it was updated to align with contemporary natural philosophy.

Notes

- 1 Martin Roch, *L'intelligence d'un sens: odeurs miraculeuses et odorat dans l'Occident du haut Moyen Âge (Ve–VIIIe siècles)* (Turnhout: Brepols, 2009); Mary Thurlkill, *Sacred Scents in Early Christianity and Islam* (New York: Lexington Books, 2016).
- 2 Susan Ashbrook Harvey, *Scenting Salvation: Ancient Christianity and the Olfactory Imagination*, Challenges in Contemporary Theology (Los Angeles: University of California Press, 2006); Béatrice Caseau, "Euodia: The Use and Meaning of Fragrances in the Ancient World and their Christianization (100–900 AD)" (Princeton University PhD dissertation, 1994).
- 3 C.M. Woolgar, *The Senses in Late Medieval England* (New Haven: Yale University Press, 2006); Paul Freedman, *Out of the East: Spices and the Medieval Imagination* (New Haven: Yale University Press, 2008); Carole Rawcliffe, *Leprosy in Medieval England* (Woodbridge, UK: Boydell, 2006); Carole Rawcliffe, *Urban Bodies: Communal Health in Late Medieval English Towns and Cities* (Woodbridge, UK: Boydell, 2013).
- 4 Richard Palmer, "In Bad Odour: Smell and its Significance in Medicine from Antiquity to the Seventeenth Century," in *Medicine and the Five Senses*, ed. W.F. Bynum and Roy Porter (Cambridge: Cambridge University Press, 1993), 61–68; Simon Kemp, "A Medieval Controversy about Odor," *Journal of the History of the Behavioral Sciences* 33, no. 3 (Summer 1997): 211–19.
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- 9 Dolly Jørgensen, "Cooperative Sanitation: Managing Streets and Gutters in Late Medieval England and Scandinavia," *Technology and Culture* 49, no. 3 (2008): 565–67.
- 10 Harvey, *Scenting Salvation*, 6.
- 11 The spiritual nose was a part of the amorphous early Christian and medieval doctrines of the spiritual senses. Each sense generally distinguished between good and evil in its own way. See Paul Gavrilyuk and Sarah Coakley, eds., *The Spiritual Senses: Perceiving God in Western Christianity* (Cambridge: Cambridge University Press, 2012). Medieval authors updated each spiritual sense (including olfaction) with fresh philosophical and medical knowledge as Greek and Arabic texts were translated. See, for example, Newhauser on the spiritual eye in "Peter of Limoges," 28–44.

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Part 1

The anatomy and physiology of olfaction



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1 “A smell is always a ‘half-breed’”

Greek and Arabic discussions of smell¹

Greek philosophers and medical authors wrote far more about the sense of smell than reached the medieval world, as recent research has attested.² Texts from the Hippocratic Corpus, Empedocles, Hellenistic doctors, and Theophrastus all discussed the mechanism and uses of the human sense of smell. While most of these sources made little impact on thinking about the senses in medieval Europe, there are two general groupings of Greek theories on smelling that were important to scholastic thought on the sense of smell: the Aristotelian and the Galenic.³ Medieval scholars received the theories of Galen and Aristotle first through Arabic medicine and later directly. The Arabic-language authors who are cited most often in European discussions of smell are Isaac Israeli, Avicenna, Averroes, Haly Abbas, and Constantine the African. These authors were primarily medical authorities, so it is unsurprising that their main intellectual loyalty on the subject of olfaction lay with the physician Galen rather than the philosopher Aristotle. However, many of these writers, the most influential of whom was Avicenna, fused aspects of Aristotelian thought with Galenic medicine to form a new Galenic-Arabic theory of the sense smell. It is this Galenic-Arabic theory that became the starting point for medieval European smell theories.

Greek authors who considered the sense of smell defined the sense organ, the nature of odor, the types of odors, and the effects of odors on the body. Although Plato (429?–347 BC) and Aristotle (384–322 BC) agreed that the nose was the sense organ of smelling and that odor had a general balancing effect on the human body, the nature of odor—what odor physically “is”—was a source of disagreement. Plato classified odor as a vapor that was made of water and air. He also explained that there were two main types of odors—good and bad—and that they could heal or harm the entire body. Aristotle maintained that odor did not reach the sense in its physical form. Rather, the odor information was carried to the sense without matter. However, he considered fume to be the physical carrier of odor. Aristotelian fume had specific qualities. It was made of earth and air that had been elevated by heat. Therefore, it was hot and dry and could not contain cold or moist qualities—precisely the opposite of Platonic vapor. Even though odorous fume did not touch the sense itself, it played an important role as a carrier of odor and a

determiner of its qualities. Because Aristotle's odor was partially composed of earth, he was able to link odor and flavors, which the ancient Greeks widely believed were made up of earth particles. In this way, Aristotle added flavor-like odors to the two basic types defined by Plato and other early philosophers. Much later, Galen (Claudius Galenus; 129–c. 200 AD) drew on both Platonic and Aristotelian theories to develop his medical theory of smell, which changed the sense organ to the brain and redefined Platonic vapor so that it could be made of any element and carry any quality. Because he was a physician, Galen emphasized the abilities of odors to heal or harm the brain more than Platonic and Aristotelian authors had.

In the early Middle Ages, some ancient theories of the senses were acquired through surviving pagan works by authors such as Cicero and the works of early Christian writers such as Ambrose, Augustine, Cassiodorus, and Gregory the Great.⁴ These sources provided a bridge between lost texts from the ancient and late antique Mediterranean and the Middle Ages. Although early Christian authors were more typically used as theological sources, central and late medieval philosophical texts did sometimes refer to them as philosophical authorities.⁵ However, the ideas that began to be available through Latin translations from Arabic and Greek in the eleventh, twelfth, and thirteenth centuries were the real authorities to which central and late medieval scholars turned for information about the senses. Beginning in the late eleventh century, there were a large number of translations from Arabic or Greek to Latin following the beginning of the series of wars known as the Crusades and, especially, after the conquests of parts of Muslim-ruled Spain and Sicily earlier in the same century. Some of the most important works that came out of the translation movement were Constantine the African's eleventh-century translations of Arabic medical works in Italy, which subsequently led to the rise of the medical school at nearby Salerno; the translations made from Arabic in twelfth-century Spain by the circles of Gerard of Cremona and Dominicus Gundisalvi, including works of Aristotle, Galen, and Avicenna; Burgundio of Pisa's translations of Galen from Greek, also in the twelfth century; and the fresh translations of Aristotle from Greek made by William of Moerbeke in the late thirteenth century.⁶

As this survey of translations suggests, even though the ideas of Plato, Aristotle, and Galen were the roots of many medieval European understandings of the senses, a number of these influential authors' texts were not read directly. Although Plato's *Timaeus* was partially translated in the Middle Ages, the text ended before his discussion of smell.⁷ Therefore, medieval philosophers knew Plato's ideas on smell wholly through other ancient authors, early Christian writers, and Arabic texts. In any case, Plato's discussion of smell is most important for its influence on Galen. Galen's opinions on the anatomy and physiology of olfaction were, however, initially known through the interpretations of Arabic-language authors. Even when Galen's works began to be translated in larger numbers in the fourteenth century, the information on smell gleaned from Arabic texts often took precedence.⁸ Likewise, Aristotle's

doctrine reached Europe earliest through Arabic translation and commentary, and scholastics continued to rely on Arabic commentators to elucidate Aristotle's sometimes opaque arguments long after translations of his works began to circulate.

Central medieval authors first became familiar with the mechanics of smell given in Arabic texts, and later medieval authors continued to rely on Arabic accounts as authorities on olfaction. Arabic-language texts contained a largely Galenic explanation of smell blended with elements of Aristotle and Arabic innovations, especially on the sense organ. The late eleventh-century translation by Constantine the African (c. 1020–bef. 1099 AD) of the *Pantegni*, a work by Haly Abbas (ʿAlī Ibn al-ʿAbbās al-Majūsī; 925–94 AD), brought a fully developed Galenic-Arabic account of olfaction to medieval Europe, and it was readily embraced by twelfth-century authors. The *Liber dietarum universalium* of Isaac Israeli (c. 855–955 AD) was also translated by Constantine but did not become influential until the thirteenth century, by which time two texts of Avicenna (Abū ʿAlī al-Ḥusayn ʿAlī Ibn Sīnā; c. 970–1037 AD), the *Canon medicinae* and *De anima*, had also been translated and began to spread their influence throughout Europe. Although Isaac locates the sense organ in the brain, he does agree with Aristotle in considering odor to be mediated and in emphasizing the nearness of odor to flavor. Avicenna generally follows Galen, but he acknowledges that perception of odor may happen through mediation and relies heavily on the similarities between odors and flavors for judgment of illness and prescription of medicines. The *Colliget* of Averroes (Abū l-Walīd Muḥammad Ibn Aḥmad Ibn Rushd; 1126–98 AD) was also in translation by the thirteenth century. Averroes is the only Arabic author who totally rejects Galen in favor of Aristotle. However, his concept of how odorous fume comes into being is decided un-Aristotelian, and it is rejected, along with his location of the sense of smell in the nose, by medieval scholars.

Scholastic discussions of the sense of smell were an extension of two Greek traditions, one centered on Galen and the other on Aristotle. However, medieval Europe received them almost exclusively through interpretation by authors writing in Arabic. The outline here focuses on the sense organ, the nature of odor, the types of odors, and the general effects of odors on the body, in part because Greek, Arabic, and medieval Latin introductions to smell tended to include each of these categories but also because these traits are essential to understanding the specific powers that medieval authors attributed to odors to heal, to harm, and to otherwise affect bodies.

Greek discussions of the sense of smell

Han Baltussen has shown that there was considerable interest in the sense of smell before Plato that set the stage for much later inquiry. The earliest Greek ideas of smell in the Archaic period, as reflected in Homeric epic, reveal a basic division of odors into good and bad, pleasant and unpleasant.⁹

Presocratic philosophers expanded on this common cultural foundation as they considered how the sense of smell worked. Philosophers before Plato had also already begun to raise such questions as how distance from the odorous object and the qualities of the air carrying an odor affected odor perception.¹⁰ Plato's discussion of olfaction in *Timaeus* built on earlier work and formed the foundation of much later work, including that of the Neoplatonists who influenced early Christian and Muslim authors.¹¹ Even though *Timaeus* only touched medieval thought on olfaction inasmuch as it had inspired Galen and his Arabic interpreters, the points that Plato made in *Timaeus* regarding the organ of smell, the nature or medium of odor, types of odors, and the effects of odors on the body comprise the basis for most later discussions of the olfactory sense.

Plato links each of the senses with the elements: taste happens when earthy particles touch the tongue, sounds are carried on air, and fire makes sight possible. Contrary to the pattern, however, odor is not produced by a single element. Plato explains that the sense organ of smell is not able to perceive any of the pure elements: "the vessels involved in our sense of smell are too narrow for the varieties of earth and water parts, yet too wide for those of fire and air." No element, then, has any odor. Instead, an odor is a "half-breed," made up of two elements, specifically air and water. Odors exist in the transitional states between air and water, which Plato names either vapor (water turning to air) or mist (air turning to water).¹² Odorous mist or vapor comes from an object that either has become wet or is decaying (mist) or is melting or evaporating (vapor). Later authors would see these binaries as objects that are being cooled or heated. Such odorous vapor or mist enters the vessels of the sense of smell, and the nostrils sense odor. Because of their complex, intermediary state, odors cannot be classified except as pleasant or unpleasant. Odors have the effect of healing or harming the top half of the body. An unpleasant odor "irritates and violates the whole upper body from the top of the head to the navel." Conversely, a pleasant odor "soothes that area and welcomes it back to its natural state."¹³ Finally, Plato asserts that the large size of vapor or mist particles compared to those of air can be observed "when one strains to draw in breath through something that obstructs one's breathing. There will be no odor that filters through. All that comes through is just the breath itself, devoid of any odor."¹⁴ Although Plato uses this experiment to prove the coarseness of odor particles, medieval Arabic and Latin authors would use the same argument in disputes about the sense organ.

While there were many authors between Plato and Galen who adopted a more generally Platonic than Aristotelian theory of olfaction, Galen is the author who was most influential, both directly and indirectly, on medieval European thought. The works in which Galen writes the most about smell are *De instrumento odoratus*, *De usu partium*, and *De placitis Hippocratis et Platonis*.¹⁵ Although his discussion of the nature of odor might be placed alongside Plato's, Galen argues that the sense organ of smell is not the nostrils but part of the anterior ventricles of the brain. Despite Galen being the

original locator of smelling in the brain, medieval discussions of the front of the brain as the sense organ of smell do not usually cite Galen as the origin of the idea but rather point to Arabic writers of and commentators on medical texts. Galen's contributions to medieval thought about olfaction were mostly hidden within the works Arabic medical authorities because his discussions of smell are scattered throughout works that were largely unavailable to scholars before Niccolò da Reggio's fourteenth-century translations.¹⁶

Galen's discussions of the sense of smell are generally Platonic, in that he argues that smells are perceived through direct contact of matter with the sense organ and he designates vapor as the nature of odor. However, he also draws on the Aristotelian tradition and his own dissection and experimentation in his explanation of the olfactory sense.¹⁷ Galen dismisses the traditional view of the nose as the sense organ, locating smell in the anterior ventricles of the brain instead. In *De usu partium*, he explains that the olfactory sense instrument "is the only [sense] of them all to be made inside the cranium, right in the anterior [lateral] ventricles of the encephalon, which contain a vaporous *pneuma*."¹⁸ For Galen, like senses like. Therefore, the instrument of smell and odors themselves must both have a vaporous nature. The particles of vapor are larger and denser than the particles of air, for example, which carry sound. The casing that protects the olfactory organ in the brain contains pores large enough that vaporous particles can penetrate it. Galen, quoting Plato, notes that the larger relative size of vapor particles is clear when the nostrils are blocked so that only air can filter through, because then no odor is sensed even though air is breathed in.¹⁹ Although the nostrils are not the sense organ, they are still important for directing vapor-carrying air towards the brain. They also provide a passage for draining superfluities (i.e., phlegm) that collect in the brain when it is unhealthy. Even more important than either of these uses of the nostrils is that they allow the brain to breathe. This type of respiration is as necessary as respiration into the lungs. If the brain received no air or was attacked by air that was too cold, the animal could die. The ethmoid bone at the top of the nose acts as a final barrier between the sense and the outside, allowing air and odor to pass and protecting the brain from excessively cold air.²⁰

Although some of the anatomy surrounding the sense of smell is not directly related to sensing odors, Galen considers odor able to affect both the superfluities and the temperature of the brain. It has the power to affect the brain because of the matter contained within odorous vapor, which touches and changes the brain.²¹ Because odors physically alter the brain, physicians can use them to heal. They can also be a source of harm. Galen explores his theory that odors physically touch the brain in *De instrumento odoratus*, which is a treatise devoted to discussion of smelling. Given both the details and their arrangement in this introduction to smell, *De instrumento odoratus* seems to have been the most influential source for the summaries of smell in Arabic texts, particularly those of Haly Abbas and Avicenna.

The treatise begins with an acknowledgment that the nose seems to be the sense organ, since we do not smell when we breathe in with blocked nostrils. However, the nose is not actually the sense organ, because we do not smell without drawing in breath, even if something strongly scented is put in the nostrils. Galen instead locates the sense in the anterior ventricles of the brain, at the top of the nose. The nostril passages divide into two more passages in the middle of the nose, with one passage going down towards the mouth and other up to the olfactory sense in the brain. Galen explains that “the brain has two oblong and hollow processes facing towards the nostrils that have arisen from the anterior ventricles of the brain.”²² These are the olfactory organs. They rest at the top of the nostrils behind the ethmoid bone.²³ Superfluities of the brain (phlegm) flow down, filter through the ethmoid bone, and exit through the nostrils. Odor goes up to the brain through the same bone.

Odor is a vaporous exhalation from objects. Galen explains that “anything between the nature of air and water [and fire],²⁴ which is neither as fine as air nor as coarse as water, is perceptible by the sense of smell. The substance of odor is this type of exhalation from the bodies of things.”²⁵ That odor is a moist, vaporous exhalation is proven because when something, such as a rose, has been releasing its fragrance for a while, it becomes smaller and drier, thus demonstrating that the watery part of the object has been lost in exhalation. Thus far, Galen’s theory of the nature of odor aligns closely with Plato’s. However, Galen’s formulation of odorous vapor is more complex than merely a moist exhalation from objects. Bruce Eastwood shows that, across Galen’s works, the matter that objects exhale can be airy, watery, fiery, or earthy, and therefore odors can be cooling, heating, or drying to the brain, depending on their composition.²⁶ Galen’s formulation of vapor as something essentially moist but potentially carrying odor of any quality (hot, cold, humid, or dry) to the sense of smell is, as we will see, at odds with Aristotle’s definitions of both odor and vapor.

Because they are material, odors have physical effects on the brain. Indeed, the effects that odors have on the brain prove that they carry some substance to it. Although part of the reason the brain perceives odors is that both the brain and odor are vaporous, vapor is not capable of having much effect on the brain in itself. Instead, odors must contain some of the substance of the odoriferous object. Strong odors are harmful to the brain, causing pain, congestion, and heaviness at the least and sometimes more serious illness, such as delirium. However, the matter carried in vaporous odors can also heal the brain, as in the case of sunstroke, when the overheated brain can be eased by the naturally cold scent of roses.²⁷ This Galenic concept of the general power of odors to physically change the brain with their matter lies behind nearly all uses of odor in Arabic and medieval Latin medicine.²⁸

The other strand of medieval discussion of the sense of smell comes from Aristotle’s works, which were translated from Greek and Arabic in the twelfth and thirteenth centuries. Aristotle challenges conceptions of odor as vapor and as emanations of physical particles that touch the sense. He agrees with

Plato and earlier philosophers that the nose is the organ of smelling, that air and water are important elements to the sense of smell, and that odors can heal or harm the body. However, he differs from Plato and Galen on the nature of odor, the way that odors are sensed, and on the varieties of odors. Aristotle treats smell most fully in *De anima* and *De sensu*, both of which were available to medieval authors by the twelfth and thirteenth centuries.²⁹

De anima contains a short discussion of smell. Aristotle assumes that the sense organ is the nose. The nose is potentially dry, because smells have a dry nature.³⁰ Unlike Platonic and Galenic accounts of the senses, which rely on similarity between the sense and its object, Aristotle's explanation depends on opposition between the (actively) cold and moist nose and hot and dry odor. The act of hot, dry odor changing the cold, moist nose creates sensation. Additionally, while earlier authors maintained that the sense of smell is stimulated by direct contact of odorous, matter-containing vapor or mist with the nose, Aristotle argues that smell is a mediated sense that does not function through direct contact, since nothing is smelled when something scented is put inside the nose.³¹ The medium of smell is an unnamed quality found in both air (for land animals) and water (for sea animals) that is able to carry odor, just as the transparent quality in air or water makes vision possible.³² Since the human sense of smell is inferior to that of most animals, humans distinguish smells primarily according to whether they bring pleasure or pain—in other words, as good or bad. As with the other senses, if the sense object is too extreme (in the case of odors, too good or too bad) then the ability to sense is destroyed after brief exposure and the sense object is no longer perceived. However, while Aristotle explains in both *De anima* and *De sensu* that all the senses perceive qualities intermediate between two extremes (e.g., black and white, sweet and bitter), the weakness of the human sense of smell means that there are not many intermediate odors that humans can sense.³³

The intermediate odors that humans can sense are those that are similar to flavors (sweet or bitter with the subtypes succulent, salty, pungent, harsh, astringent, and acid). However, these names can only be given to odors metaphorically, by association with similar flavors, because smells are too complex for the weak human nose to distinguish so specifically. Smell can also categorize objects as scented or unscented.³⁴ Finally, since humans perceive odors only when they inhale, Aristotle postulates coverings somewhere inside the nose that block out odors in the same way that eyelids block color information from entering the eyes and stimulating vision. These covers make the human sense of smell different from smell in other animals.³⁵ Aristotle does not describe the effect of odors on the body, although he notes that strong odors such as those of putrefaction and sulfur harm man and other animals.³⁶

In *De sensu*, Aristotle's discussion of the sense of smell is more complex. Associating the senses with the elements, he links vision with water, sound with air, touch and taste with earth, and smell with fire. Although smell shares a hot and dry nature with fire, Aristotle argues that the elements themselves do not have odor unless they are mixed with something, a flavor.³⁷ This is a

vital concept in his intricate explanation of the mediation of odor. In *De sensu* 2, he asserts that “odor is a fumous evaporation. Fumous evaporation arises from fire. It is for this reason that the sense of smell’s proper organ is in a place near the brain, because cold matter is potentially hot.”³⁸ As in *De anima*, Aristotle depicts odor as hot and dry, in this case the fumous evaporation that occurs when something burns, and he describes the organ as something like the nature of the brain, which is cold and moist. There are three important points in this passage. First, the organ of smell is slightly ambiguous. Aristotle still assumes it is the nose, but he also argues that one purpose of smell in humans is to temper the cold moistness of the brain with the hot dryness of odors, which suggests that odors touch the brain somehow.³⁹ Medieval authors would make use of Aristotle’s ambiguity in this passage to manufacture his agreement on the location of the sense organ in the brain. Second, the clear assertion that odor is a fumous evaporation became perhaps the most common short definition of odor. Finally, Aristotle implies that odor is unmediated (in other words, that physical odorous matter touches the brain), which will allow Latin scholars to avoid discussion of mediation if they wish to do so.

In Chapter 5 of *De sensu*, Aristotle goes into detail about what odor is and how it is sensed, and the discussion here is firmly grounded in mediation. He dismisses the theory of emanations, or particles from odoriferous objects reaching out to the sense organ. Odor cannot, as Plato and other authors argued, be a vapor (made of water and air), because vapor is only moisture, which should not have an odor. Likewise, it cannot be a fumous evaporation or exhalation (made of earth and air), because fumous exhalation cannot exist in water, but odors are perceived by animals that live in water.⁴⁰ This argument seems to contradict the definition of odor in *De sensu* 2 as a fumous, or smoky, evaporation. However, Aristotle has specific qualities of odor in mind when he calls it fumous or smoke-like.

In Aristotle’s formulation, fume is a hot and dry smoke that arises from the earth when the sun strikes it.⁴¹ The earthy nature of fume is key to understanding how Aristotle got from odor as a fumous exhalation to the mediation of odor. According to *De sensu* 4, flavor and odor both arise from the same quality. Modern scholars term this quality the “flavored” dry, but medieval texts usually describe it as “enchymous,” or moistened, dryness. The flavored dry is earthy, nutrient-bearing matter. Without nutrient, the dry (or earth) has no flavor or smell.⁴² Because of the shared origins of odor and flavor in nutrient-bearing earth, Aristotle argues that flavor and odor “are almost the same passion; however, they are not the same thing.”⁴³ He explains that flavor is produced by the action of heat on nutrient dry and earthy matter that is washed in the moist.⁴⁴ In other words, flavor is sensed by mixing food with warm liquid (e.g., saliva on the tongue) in the same way that, if you put something colored in warm water, the water takes on the color. Likewise, flavor develops in vegetables growing in the earth when they are acted on by the sun and rain. All ancient philosophers agreed that the sense of taste has

an earthy nature, so, although the flavored dry is a complicated explanation of flavor, it is still in accord with tradition.

Aristotle veers from tradition when he adds that the same flavored dryness produces odor through the ability of air and water to mediate odor. Water and air are able to mediate smell “not according to transparency but according to the ability to wash or cleanse the flavored dryness.”⁴⁵ Aristotle’s younger contemporary Theophrastus (c. 371–287 BC) made this quality a little easier to understand by naming it “diosmic” or “transodorant.”⁴⁶ In other words, air and water are able to carry the odor of the flavored dry through their ability to allow odor to pass through them and towards the sense (transodorancy) in the same way that both elements allow light to pass through to create vision (transparency). Aristotle suggests that their similar moist quality is the key when he posits that if air and water are both taken to be humid, “odor will be the nature of the flavored dry in the humid, and such things will be odoriferous.”⁴⁷ Although fume cannot exist in water, land animals perceive the flavored dryness of odor in the nature of fume. In *Meteorologica*, Aristotle gives a precise definition of fume: it arises from the dry nature of the earth that has been heated by the sun, so fume is dry, hot, and earthy.⁴⁸ Its dry and hot nature makes it similar to the nature of fire. Following Aristotle’s logic, fumes have to carry nutrient earthy matter in order to convey odor. Therefore, Aristotle has reasonable logical consistency when he gives smell the qualities of fire, when he discusses odor as a fumous exhalation, and when he describes the mediation of odor in the flavored dry.

Unlike in *De anima*, in *De sensu* Aristotle recognizes two distinct types of odors, arguing explicitly against the idea that humans cannot differentiate odors well enough to classify them. One is associated with food and is only pleasant when an animal is hungry or likes the food producing the smell. The odors in this category bear the same names as flavors. Aristotle remarks that “there are sour, sweet, pungent, harsh, and coarse odors, and one may certainly call putrid odors proportional to bitter flavors, because just as bitter flavors are difficult to swallow, putrid things are difficult to breathe.”⁴⁹ The other group of odors is restricted to humans alone and includes odors that are pleasant in themselves and at all times, such as the odors of flowers. Nature created these odors to balance the especially cold, moist qualities of the human brain. Hot and dry odors keep the human brain from becoming too cold and moist. On the other hand, fumous evaporations from food, which rise from the stomach to the brain and are then cooled, can over-moisten the brain and cause rheumatic illnesses (sicknesses with a runny nose).⁵⁰ In addition to these odors that are pleasant in themselves, Aristotle mentions odors that are unpleasant in themselves. He notes that animals do not care about pleasant odors and likewise do not care about unpleasant ones, unless they are poisonous like charcoal fumes or sulfur. On the other hand, humans notice unpleasant smells even if they are not lethal. He does not, though, explain the reason the human sense of smell reacts to unpleasant odors that are not dangerous.⁵¹

Ancient philosophers were far from unanimous in their opinions on how the sense of smell worked. As we have seen, Aristotle's ideas are inconsistent even within the same text. Thomas K. Johansen argues that Aristotle's difficulty in explaining how the sense of smell works calls into question his overall sensory theory:

We see therefore behind the apparently minor interpretative question of how to distinguish odour from flavour an issue of global importance to Aristotle's theory of the senses. What is at stake is the entire method of defining the senses by their proper objects.⁵²

The difficulties with Aristotle's explanation of smell do not end with its proper object. John Ellis brings forward Neoplatonic questions about Aristotle's doctrine, asking with them, "Didn't Aristotle say that accidents cannot exist apart from that in which they inhere? But fragrances seem to travel to us from their subjects, and aren't they accidents?" This ambiguity "attacks the basis of Aristotle's ontology, the distinction between substance and accident."⁵³ Aristotle might have responded that odors do not actually separate from their objects and that only the information is carried to the sense. However, his position on the mediation of odor was unclear enough to raise questions. Galen's writing is not without controversy, either. Bruce Eastwood shows that Galen's "complex understanding" of the sense of smell led him to discuss it differently across four texts, which has caused uncertainty in modern editions about what Galen actually meant.⁵⁴

Arabic anatomy and physiology of smell

Medieval European authors were spared much of the disagreement of the ancient world about the sense of smell because of the general agreement in sources from the Muslim world that the front part of the brain was the organ of smell. Likewise, although they drew on Aristotle for certain aspects of smell theory, Arabic authors usually adopted Galen's explanation of the nature of odor as a physical thing that could affect human health. The Arabic sources most frequently used by Latin authors as authorities on the sense of smell are Isaac Israeli's *Liber dietarum universalium*, the *Canon medicinae* and *De anima* of Avicenna, Averroes's *Colliget*, and two translations of Haly Abbas's medical encyclopedia, the *Pantegni* (a partial translation by Constantine the African) and the *Liber regalis* (a complete translation by Stephen of Antioch). Other authors, including Algazel (al-Ghazālī; c. 1058–1111) and Johannitius (Ḥunayn ibn Ishaq; 808–73), also discuss smell to a greater or lesser extent but are far less frequently cited in Latin scholarship about smelling. The texts of Isaac, Haly Abbas, Avicenna, and Averroes demonstrate the development of Arabic theory on smell as it reached the Latin West from the ninth or tenth through the twelfth century.

The two most important elements of Arabic explanations of smell are the location of the sense organ and the mediation of odors through vapor or fume. Although Averroes sides with Aristotle in making the nose the instrument of olfaction, other authors including Avicenna, Isaac Israeli, and Haly Abbas, agree with Galen that the instrument of smell is in the front ventricle of the brain. Nearly every Arabic source describes the instrument of smell as two pieces of flesh in the brain similar to breasts or “the heads of breasts” (today, the olfactory sense organs are less colorfully called the olfactory bulbs). In Latin, they appear variously as *duabus carunculis similibus capitibus mammillarum* (Averroes), *duo frustula uberibus similia* (Constantine’s *Pantegni*), and, according to Algazel as Albertus Magnus quotes him, *duabus carunculis cerebri quae sunt similes summitatibus uberum caprae* (“two little pieces of the flesh of the brain that are similar to the very tops of goat teats”). Because of this variation in terminology, the words that medieval Latin authors used to describe the olfactory organ often provide telling clues to which Arabic author they had read.

Richard Palmer attributes the name of the olfactory breasts to Avicenna, while Tamás Visi argues that they were an Arabic innovation but does not propose a point of origin.⁵⁵ Textual evidence suggests that the designation for the sense organ developed before Avicenna. Haly Abbas’s medical encyclopedia is earlier than Avicenna’s *Canon*, and in both Constantine’s *Pantegni* and Stephen of Antioch’s translation of the *Liber regalis*, the text asserts that two pieces of the brain similar to breasts constitute the sense organ of smell without citing a source for the information. Since Averroes’s *Colliget* attributes the two pieces of flesh similar to heads of breasts to Galen, perhaps the translation of Galen used by Arabic authors described the organ of smell as breast- or nipple-like. However, the *Colliget*’s Latin for the sense organ is identical to the Latin version of Avicenna’s *De anima*, and Averroes seems to have been familiar with Avicenna’s discussion of olfaction in general.⁵⁶ Unfortunately, without an examination of both texts in Arabic, it is difficult to say whether Averroes was quoting from Avicenna or if the translator was merely familiar with the Latin version of Avicenna and translated accordingly. Whatever the origin of the olfactory breasts, they remained a part of the physiology of smell at least into the seventeenth century.⁵⁷

The Arabic authors likewise developed a theory of the nature of odor that does not quite fit into the schemes of either Galen or Aristotle alone. The Arabic authors, and European authors through their influence, generally understood the nature of odor in flexible Galenic terms, in which the vapor that carries odor from objects can carry qualities of any of the four elements and therefore be cooling, heating, moistening, or drying to the brain. However, while Galen considered both odor and the front ventricles of the brain to be vaporous, that is, generally cold and moist, the standard odor in Arabic discussions of olfaction was a hot and dry aromatic odor. Odors that varied from these qualities were common, however, and included non-standard aromatic odors as well as stench and various flavor-related odors.

Thus, although Arabic authors called odor either a vapor or a fume, the terms did not align fully with either Galen or Aristotle. Following Galenic-Arabic olfactory theory, medieval European sources often make vapor and fume interchangeable terms, which conflicted seriously with Aristotle's careful differentiation of the two states of matter. The conflation of *vapor* and *fumus* seems to have developed largely because of mistranslations in texts such as the *Pantegni*, where the translator wrote *fumus* in place of *vapor*.⁵⁸ However, neither the vapor nor the fume of Arabic or medieval European scholars was the same as Galen's or Aristotle's.

The ninth- or tenth-century *Liber dietarum universalium* by the Egyptian Jewish doctor Isaac Israeli includes explanations of the workings of taste and smell, and it was often cited by European authors writing about those topics. His description of the sense of smell mixes elements of Galen and Aristotle, who are the only authorities he cites in his discussion. Isaac locates the instrument of smelling in the ventricles of the brain, like Galen, but, alone among the Arabic authors discussed here, he does not describe the instrument as breast-like. His less specific description of the sense organ suggests that perhaps he used a different translation of Galen than later authors or that the sense organs were not yet described as breast- or nipple-like. Although he appears to sum up odors as fumous, Isaac's text was translated by Constantine the African, who always used *fumus* over *vapor*. However, he describes odors as hot and dry and also believes that they are mediated, which are Aristotelian positions.

Isaac argues that good odors penetrate to the sense instrument more readily than bad ones because of the subtle (i.e., finely textured), hot, and dry nature of good odors, while bad odors are coarser, heavier, and less easily separated from their objects to become fume or smoke. Bad odor cannot easily reach the animal spirit, a force of the brain involved in sense perception, because animal spirit is finely textured and exists deep within the brain. Finely textured good odors can easily reach it, but only as odor information and not as matter, because corporeal things cannot reach the animal spirit.⁵⁹ As part of his explanation of odors and their utility in judging the qualities of food, he enumerates three types of fumes: one that is still and has no odor; one that moves quickly, contains heat, and has a strong odor; and the medium between those two.⁶⁰ Only the last two types of fume have odor. However, regarding odors themselves, the human sense of smell is so weak that, like animals that can only see black and white, humans only perceive good and bad odors and none of the intermediary smells. However, bad odor can be subdivided into fetid, which is harmful to the brain and indicates that the nature of a food is entirely unnourishing, such as rotten fish, and heavy, which is less harmful to the brain and merely indicates food of poor nourishment, such as fresh fish. Finally, while Isaac only mentions the powers of odors to heal or harm briefly and in passing, there is a general sense in his text that good odors soothe the animal spirit in the brain while bad odors harm it.⁶¹

Even though he sides with Galen on the sense organ, Isaac is probably the Arabic author who most closely follows Aristotle on the sense of smell. The

twelfth-century scholar Averroes argues in favor of Aristotle's physiology of smell, including the sense instrument, but he is less precise than Aristotle on the fumous nature of odor. In *Colliget*, Averroes mentions the two nipple-like projections from the brain when he describes the anatomy of the nose, but he denies that they are the instruments of smell. The brain cannot be the sense organ of smell because we do not smell when we breathe in through the mouth, which has a passage to the nostrils and the brain through the palate, with our nostrils blocked.⁶² Odor itself is a fumous vapor that is hot and dry and has the property of healing cold sicknesses in the brain.⁶³

Averroes's account of the path of odoriferous things to the nose is much more complicated than Aristotle's explanation of how fume is produced in that it flows through all four elements. Averroes begins with the assumption that the medium of odor is air or fire. However, the other elements must be involved in order to produce the mixture that creates the flavored dry. Each of the elements is able to pass along its substance because of single shared qualities (hot, cold, moist, and dry) between the element passing along its matter and the one receiving. First, cold and dry earth sends its (dry) vapor to cold and moist water, which it is able to do because they are both cold. Then, warm and moist air accepts moist vapor from water through their similar moist quality. Finally, air transmits the vapor to hot and dry fire through their shared heat. The complex, odoriferous vapor is finally dissolved and able to reach the sense of smell. By this time, the vapor is hot and dry, like fire, and capable of correcting excess coldness in the brain.⁶⁴ Averroes, or possibly his Latin translator, uses a looser definition of vapor than Aristotle, indicating an emanation from an element or object rather than Aristotle's or Plato's combination of air and water. Indeed, vapor produced in this way would seem able to carry odors of many qualities, like Galenic vapor. Most likely, the Galenic-Arabic explanation of olfaction had already been established and well-incorporated into Arabic philosophy and medicine by the time Averroes wrote, making it difficult for him to completely detach Galen's influence from his account of smelling.

Avicenna, a scholar of the eleventh century, wrote two works that treat odor: his philosophical work, *De anima* or *Sextus de naturalibus*, and his medical encyclopedia, the *Canon medicinae*. His position is more, although not entirely, Aristotelian in the philosophical text and more Galenic in the medical text. The *Canon*'s influence on medieval and early modern medicine was enormous, given its long-term status as a medical textbook in universities. *De anima* also enjoyed a strong influence on medieval European writing about the powers of the soul, particularly from the mid-twelfth to the mid-thirteenth century, when the medieval theory of olfaction was being developed.⁶⁵

In his philosophical work, Avicenna deals briefly with the physical instruments of smell in part five, merely noting that "olfaction happens through two pieces of flesh that are in the first part of the brain similar to the heads of breasts."⁶⁶ He is more interested in how odor gets to the sense organ than in the organ itself. He begins with a fairly standard Aristotelian comparison of the human ability to smell with that of other animals. Although

humans are better at drawing out smells from things by rubbing them than other animals, the human sense of smell is weak. Since the human sense organ receives weak impressions of the sense object, humans only have two types of names for odors: one type based on whether they are pleasing or displeasing and the other type based on the similarities of odors to flavors. The human sense of smell does not discriminate very well between odors, just as hard-eyed animals have trouble distinguishing colors (although hard-eyed animals, such as bees, can often smell very well). The medium of smell is something that does not have a smell, such as air or water.⁶⁷

Avicenna's real interest in *De anima* is the nature of odor. He recounts three philosophical positions on that point. The first argument is that the medium is changed by very fine pieces that are separated, or resolved, from something that has odor, and the sense perceives the changed medium. Because the changed medium contains some odor particles, this is essentially an argument for direct sensation of odor. Advocates of this position point out that heat alone could not possibly create odor. Therefore, some particles of the odoriferous object must be resolved into vapor or fume to create odor. The vapor or fume, activated by heat, then mixes with the medium, the air. The evidence that physical movement of particles occurs is that "when you have smelled an apple for a long time, it withers because so much was resolved from it."⁶⁸

The second argument is similar to the first but emphasizes that there are no parts of odoriferous bodies mixed with the medium, so that the organ senses only information about the odor without any matter. This is a variety of species theory that requires the species (i.e., the immaterial information about the odor) to change the medium. Advocates of this theory argue that "if the odors that fill a large space came from resolution of something, it would be necessary for the odoriferous thing to become lighter and for its quantity to become less because of the matter that was resolved from it."⁶⁹ In contradiction to the example of the apple in the first position, philosophers who argue for this permutation (or change) of the medium without matter do not believe that odoriferous things release enough matter to account for the spread of odor because things that release odor do not become smaller over time.

The last argument is that odor either reaches the sense organ without permutation of the medium or, if there is permutation, then it happens in the same way as with sound and color, so that the medium carries the odor but is not changed by it.⁷⁰ This is another species argument, but it does not allow for much change to the medium. Supporters of this argument believe that it is impossible for odor to cross such long distances as it is known to cover (up to a hundred leagues) by either permutation of the medium or physical particles carried in vapor when even a large fire can only produce heat for a small area around it. They point to a story about a carrion eating bird called the tiger bird, *avis tigris*, that lived a hundred leagues away from Greece and was never seen there. However, once when a war was fought in Greece, the birds were attracted there by the odor of the many corpses. Since they must

have been drawn there by the odor, proponents of this argument reason, it is obvious that odors cannot be either physical vapor or permutations, because neither of those could not possibly cross for a hundred leagues. Therefore, the medium must carry the odorous information without having been changed by the odor.⁷¹

Avicenna's own position blends the arguments. While he acknowledges that permutation spreads odor farther than it would be able to reach through direct sensation alone, he also accepts direct sensation of odorous vapor as physical matter. He gives the example of a piece of camphor that is evaporated in a room. The camphor particles in the odorous vapor arising from the camphor change the air around them so that the odor of camphor spreads twice as far as the vapor is able to reach on its own. Thus, although odor can be sensed directly if it is drawn into the nostrils, permutation of the medium allows odors to spread over long distances.⁷² He adds, regarding the example of the tiger birds, that many animals have a stronger sense of smell than humans, so it is not impossible that tiger birds could sense odors directly over a longer distance, especially with the aid of a strong wind bringing the odor to them. The birds might also have seen the cadavers from a long distance, since they fly above even the highest mountains and are therefore able to see farther than other animals.⁷³

In the *Canon*, Avicenna is less concerned with how odor happens than with the physiology of the sense and the uses and effects of odors on the human body. The instruments of smell "are two little breast-like additions that are in the anterior of the brain."⁷⁴ The purposes of these instruments is to receive odors. He explicitly sets aside the issue of the mediation of odor, saying that questions of how odor is sensed are the concern of philosophers, not doctors. It was enough for doctors to know that odor "occurs through the conversion of something into air, which follows the path of dilation [of the brain as it contracts to draw in air], and then it aids the brain by perception of the vapor that comes from something that has odor."⁷⁵ Essentially, doctors proceed as if odors were physical vapors drawn up to the brain and able to heal or harm it. Although some odors are cooling, most good-smelling odors are hot and signify heat in the odoriferous medicine. Breathing in air and odor allows the brain to maintain appropriate levels of natural heat. However, when the heat of aromatic odors touches the cold brain, it can cause headaches.⁷⁶

The *Pantegni*, a partial translation of a work of the tenth-century Persian physician Haly Abbas by Constantine the African, is a particularly important text because it was one of the earliest Arabic works that discussed smell at any length to be translated into Latin. Salerno and other medical schools used it as a textbook, which likely contributed to its frequent citation by twelfth-century and later authors writing about olfaction. Its ideas continued to be influential even when other, better-translated texts, including a better translation of Haly Abbas, became available. The discussion of smell in the *Pantegni* primarily follows Galen.

Constantine's brief explanation of the organs of smelling and the process of sensation is commonly repeated by medieval European authors, especially before the thirteenth century:

Certain people think that the paths appearing in the nose are the instrument of smelling, because no smell is sensed with blocked nostrils and if they are opened it is sensed immediately. But their opinion is false. Indeed, the nostrils only bring fragrant things to the front of the brain. Two pieces of flesh similar to breasts are the instrument of smelling. They descend to the ethmoid bone where the *dura mater* is perforated, and similarly, higher up, the ends of the breasts reach into the front ventricles of the brain. Smelling happens thus: odoriferous fume resolved from bodies and mixed with air is drawn through the holes of the nostrils towards the breasts, which fume is transmitted to the brain through perforations of the breasts.⁷⁷

The anatomy of the sense organ is Galenic, aside from the description of the organs as breast-like. Likewise, odor seems to reach the sense organ unmediated, but Constantine calls it fume rather than vapor. Constantine also asserts that "fume is between an earthy and a watery nature."⁷⁸ Eastwood notes that the Galenist Hunayn ibn Ishāq (Johannitius) in his *Ten Treatises on the Eye* asserts that odor is vaporous and has a nature between earth and water and similar to air, so the idea that odor is earthy and watery is Galenic.⁷⁹ The use of *fumus* in *Pantegni* rather than *vapor* is a problem of Constantine's translation. Stephen of Antioch made a more accurate translation of the same work under the title *Liber regalis* in the twelfth century. He translates "vapor" where Constantine used "fume" in every case.⁸⁰ Haly Abbas, then, faithfully repeated Galen's doctrine on smell, but Constantine's version was often read and cited by medieval European authors.

Aside from Averroes, the Arabic authors overwhelmingly adopted Galen's anatomy of smelling. They added only the descriptive element of the olfactory breasts or nipples, which seems to have been either an Arabic innovation or part of an Arabic translation of Galen that was available either not before the mid- or late tenth century or initially only to Persian authors, since Isaac does not refer to the olfactory breasts but both Haly Abbas and Avicenna do. Most of the Arabic scholars accepted Galen's account of the nature of odor, although most authors also included some of Aristotle's discussion in their own explanations. Avicenna and Haly Abbas follow Galen's conception of vapor, in which the odor it carries can be either heating or cooling depending on its elemental composition. The conflation of vapor and fume in Averroes was perhaps caused by a bad Latin translation but, given his use of both terms, it seems likely that he is not clear on the difference in the original Arabic, either. The influence of these Arabic texts on Latin works was enormous and included the olfactory breasts as the organ of smell, discussions of the complex issue of odor perception, and a Galenic understanding of the

nature of odor, the latter of which is vital to the attributions of powers to odors by scholastic philosophers and especially physicians.

Conclusion

While the ancient and late antique Greek world had much to say about the sense of smell, the theories of Galen and Aristotle were the most influential to medieval Europe. Galen's theories came to scholastic and medical authors with a distinct Arabic accent, particularly on the anatomy of the sense organ. Although some of Galen's ideas about the powers of odors, such as his discussions of the odors of simple medicines, began to be taken directly from his texts during the late Middle Ages, his anatomy and physiology were cited only through Arabic authors. Galen was rarely acknowledged as the source of the idea, however. Most often, medieval authors cited information about the sense organ and discussions of the nature of odor from Arabic authors, who had built on Galen's theory by combining it with other information. Furthermore, some of the Galenic-Arabic account of olfaction was Aristotelian, such as the link between odors and flavors and the suggestions of mediation found in Isaac and Avicenna. Avicenna was particularly important to medieval European authors, because his works pointed to a method of integrating Aristotelian with Galenic olfaction. When Aristotle began to be further incorporated into the Arabic discussion of olfaction by medieval authors, the nature of odor remained complex, but its mediation figured more prominently in what became the standard medieval European account of olfaction.

Notes

- 1 The quotation in the title is part of Donald Zeyl's translation of Plato, *Timaeus* (Indianapolis: Hackett Publishing Company, 2000), 60.
- 2 E.g., Laurence Totelin, "Smell as Sign and Cure in Ancient Medicine," in *Smell and the Ancient Senses*, ed. Mark Bradley (New York: Routledge, 2015), 17–29; Han Baltussen, "Ancient Philosophers on the Sense of Smell," in Bradley, *Smell and the Ancient Senses*, 30–45; Baltussen, "Understanding Odours in *Problemata* 12–13: Peripatetic Problems Concerning the Elusive Sense of Smell," in *The Aristotelian Problemata Physica: Philosophical and Scientific Investigations*, ed. Robert Mayhew (Boston: Brill, 2015), 172–89.
- 3 Simon Kemp has argued that the two strains of ancient thought on the sense of smell that influenced medieval discussions were Plato's and Aristotle's. However, while some ideas in what Kemp identifies as the Platonic theory originate with Plato, they mostly reached medieval Europe in Galen's heavily modified version of Platonic smell theory. Furthermore, medieval scholars and medical practitioners mostly received Galen's writings about smell through Arabic authors. For most of the Middle Ages, scholars read Aristotle's ideas on smell more directly than either Plato's or Galen's. Therefore, it is more appropriate to discuss the two strands of thought that formed medieval olfactory theory as Galenic or Galenic-Arabic and

- Aristotelian. See Simon Kemp, "A Medieval Controversy about Odor," *Journal of the History of the Behavioral Sciences* 33, no. 3 (Summer 1997): 211–12.
- 4 As far as I am aware, there is no study of philosophical concepts about smell—as distinct from theological ones—in medieval Europe before the introduction of Arabic texts, although Martin Roch briefly considers philosophical explanations of smell in *L'intelligence d'un sens: odeurs miraculeuses et odorat dans l'Occident du haut Moyen Âge (Ve–VIIIe siècles)* (Turnhout: Brepols, 2009), 87–94.
- 5 For example, Bartholomew the Englishman's thirteenth-century encyclopedia cites Gregory the Great three times in his chapters on smell: once regarding the proper proportions of the nose and twice regarding the nature of fume, or smoke, a state of matter that is related to smell. The Trevisa translation has Galen, *Super cantica* instead of Gregory, *Super cantica* in V.13, but that is clearly an error. Bartholomew, *De proprietatibus rerum*, V.13, 142; X.5, 477–78.
- 6 Nancy Siraisi, *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice* (Chicago: University of Chicago Press, 1990), 14–15; John Marenbon, *Medieval Philosophy: An Historical and Philosophical Introduction* (New York: Routledge, 2007), 169–71, 210–12.
- 7 Donald J. Zeyl, "Introduction" to *Plato: Timaeus*, trans. Donald J. Zeyl (Indianapolis: Hackett Publishing Company, 2000), xiv.
- 8 Galen's *De usu partium* was not translated until the fourteenth century, and *De instrumento odoratus* seems to have been unknown to Latin authors before the sixteenth century. The works that were available and frequently used, such as the *Tegni* and the commentary on the Hippocratic *Aphorisms*, have little to say about the mechanics of the sense of smell. Even when *De usu partium* was translated, it was not fully incorporated into medieval knowledge because the plague interrupted scholarly activity. See Michael R. McVaugh, "Niccolò da Reggio's Translations of Galen and their Reception in France," *Early Science and Medicine* 11, no. 3 (2006): 299.
- 9 Baltussen, "Ancient Philosophers," 33.
- 10 *Ibid.*, 38.
- 11 For an overview of Neoplatonist discussions of olfaction, see John Ellis, "The Problem of Fragrance," *Phronesis* 35, no. 3 (1990): 290–302.
- 12 Plato, *Timaeus*, 66d–e, 60.
- 13 *Ibid.*, 66e–67a, 60.
- 14 *Ibid.*, 66e, 60.
- 15 Bruce Eastwood, "Galen on the Elements of Olfactory Sensation," *Rheinisches Museum für Philologie* 124, no. 1 (1981): 268.
- 16 McVaugh, "Niccolò da Reggio's Translations," 299. McVaugh argues that the new translations of Galen were ignored perhaps because the plague gave doctors more concern for treatment than theory and little interest in overhauling medical theory and terminology, which would have been required if the new translations became standard because of significant differences between the Arabic-Latin translations and Niccolò's Greek-Latin translations.
- 17 *Ibid.*, 286–89.
- 18 Galen, *On the Usefulness*, VIII.6, 1:405; *ex omnibus intra cranium extiti in ipsis cerebri anterioribus ventriculis, qui etiam vaporosum quendam spiritum continent* (Galen, *De usu partium*, VIII.6, 3:647).
- 19 Galen, *On the Usefulness*, VIII.6, 1:405; Galen, *De usu partium*, VIII.6, 3:647–48.

- 20 Galen, *On the Usefulness*, VIII.6, 1:406–07; Galen, *De usu partium*, VIII.6, 3:649–51.
- 21 Galen, *On the Usefulness*, VIII.6, 1:405; Galen, *De usu partium*, VIII.6, 3:647.
- 22 [*C*]erebrum ... ipsum processus duos ad haec ipsa loca spectantes habet, eosque oblongos et concavos, qui ex anterioribus cerebri ventriculis ortum habent. Galen, *De instrumento odoratus*, ch. 2, 2:859. All translations are my own unless otherwise noted.
- 23 The Latin reads *ossa coli similia* or *colatoria*. Medieval sources usually call this the *colatorium*, or sieve-like bone. Ibid., ch. 2, 2:859.
- 24 Eastwood notes that the Greek text reads that the odorous vapor is between air, water, and fire but fire was left out of the Latin translation. See Eastwood, “Galen on the Elements of Olfactory Sensation,” 272–73.
- 25 [*A*]liquid vero, quod inter naturam aeris et humoris est, in odorandi sensum cadit, quod neque ita tenue est, ut aer, neque ita crassum, ut humor; id enim, quod a rerum corporibus exhalat, odoris substantia est. Galen, *De instrumento odoratus*, ch. 2, 2:862.
- 26 Eastwood, “Galen on the Elements of Olfactory Sensation,” 285–88. Eastwood argues that Galen drew his idea of earthy matter in smells from Aristotle’s odor theory.
- 27 Galen, *De instrumento odoratus*, ch. 6, 2:884.
- 28 Nemesius, Bishop of Emesa (fl. c. 400 AD) also understands the brain to be the organ of smell in *De natura hominis*, a work first translated from Greek into Latin in the eleventh century. Medieval authors attributed this work to Gregory of Nyssa and sometimes cited it as an authority on the structure of the sense organs (Albertus Magnus cites him in *De homine*, q. 28, art. 1). Although it was overshadowed by Arabic texts, *De natura hominis* is an example of a Greek work that both reached medieval Europe without Arabic interpretation and transmitted Galenic ideas about smell, specifically that odor was a vapor and the brain was the sense organ. The text was also influenced by Neoplatonic and Aristotelian texts, from which he gets information about the mediation of odor and the nature of odor in vapor. Nemesius diverges from all of his source authors to posit three types of odorous vapors: good, bad, and a medium odor that is neither good-nor bad-smelling. Which category odorous vapor belongs to depends on whether the moistures of the vapor have been properly “digested,” or incorporated into the nature of the odoriferous object. Humors that have been fully incorporated into their object create good odors, while less incorporation of the humors creates odors that are either bad or indifferent. Thus, Nemesius’s discussion of smelling brought a theory of olfaction to medieval Europe that was largely Galenic. See Nemesius of Emesa, *De natura hominis: traduction de Burgundio de Pise*, ed. G. Verbeke and J.R. Moncho (Leiden: Brill, 1975), esp. chs. 5, 6, and 10. See also Nemesius of Emesa, *Nemesius: On the Nature of Man*, trans. R.W. Sharples and P.J. Van der Eijk (Liverpool: Liverpool University Press, 2008).
- 29 For the Latin text of all works of Aristotle, I am using William of Morbeke’s mid-thirteenth-century translations from the *Aristoteles Latinus* database. William of Morbeke’s translation became the most commonly used translation of the Middle Ages. I have also consulted the English translations in *The Complete Works of Aristotle*, Vol. 1, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984).

32 *The anatomy and physiology of olfaction*

- 30 Aristotle, *De anima*, II.9, 422a6.
- 31 Ibid., 421b14–16.
- 32 Ibid., 421b8–13.
- 33 Aristotle, *De anima*, II.11, 422b26; III.2, 426a27–b8; Aristotle, *De sensu*, ch. 1, 439b20–440a15, 440b1–3; ch. 2, 445b21–446a5.
- 34 Aristotle, *De anima*, II.9, 421a7–421b8.
- 35 Ibid., 421b26–422a5.
- 36 Ibid., 421b21–25.
- 37 Aristotle, *De sensu*, ch. 5, 443a8–15.
- 38 *Odor vero fumalis evaporatio est, fumalis autem evaporatio ab igne. Propter quod et circa cerebrum loco odoratus proprium sensitivum est, potencia enim calida que frigidi materia est.* Ibid., ch. 2, 438b24–27.
- 39 Ibid., ch. 5, 444a8–16.
- 40 Ibid., 443a21–443b1.
- 41 Aristotle, *Meteorologica*, I.4, 341b1–3.
- 42 Aristotle, *De sensu*, ch. 4, 441b15–29; ch. 5, 443a8–15.
- 43 *Fere enim eadem est passio, non in eisdem autem est utrumque eorum.* Ibid., ch. 4, 440b29.
- 44 Ibid., ch. 4, 441b15–29.
- 45 *[E]st autem odorabile non secundum quod perspicuum, set [sic] secundum quod laubile uel mundabile enchyme siccitatis.* Ibid., ch. 5, 442b30–443a2.
- 46 Robert W. Sharples, “Theophrastus on Tastes and Smells,” *Theophrastus of Eresus: On his Life and Works*, ed. William Fortenbaugh (New Brunswick: Transaction, 1985), 2:183–204, esp. 195.
- 47 *[E]rit utique que in humido enchymi sicci natura, odor, et odorabile, tale.* Aristotle, *De sensu*, ch. 5, 443a7–8.
- 48 Aristotle, *Meteorologica*, I.4, 341b1–3.
- 49 *Et enim acetosi et dulces sunt odores et austeri et pontici et crassi et amaris proportionales dicat utique quis putridos; quare quemadmodum illa difficilis potationis, putrida dysanapneusta sunt.* Aristotle, *De sensu*, ch. 5, 443b9–12.
- 50 Aristotle, *De sensu*, ch. 5, 443b26–29, 444a3–4, 444a8–19. The concept of food fumes or vapors rising to the brain is frequently found in Arabic medicine as well as in Galen.
- 51 Aristotle, *De sensu*, ch. 5, 445a4–16.
- 52 Thomas K. Johansen, “Aristotle on the Sense of Smell.” *Phronesis* 41, no. 1 (1996): 11.
- 53 Ellis, “The Problem of Fragrance,” 291.
- 54 Eastwood, “Galen on the Elements of Olfactory Sensation,” 290.
- 55 Richard Palmer, “In Bad Odour: Smell and its Significance in Medicine from Antiquity to the Seventeen Century,” in *Medicine and the Five Senses*, ed. W. F. Bynum and Roy Porter (Cambridge: Cambridge University Press, 1993), 62; Tamás Visi, “Berechiah ben Naṭronai ha-Naḡdan’s *Dodi ve-Neḡdi* and the Transfer of Scientific Knowledge from Latin to Hebrew in the Twelfth Century,” *Aleph* 14, no. 2 (2014): 53–58.
- 56 His commentary on Aristotle’s *De anima* includes an anecdote about animals going to the site of a battle from a long distance, attracted by the smell of corpses: *multa animalia moventur ad nutrimentum per spacium multarum dietarum, sicut apparet in Vulturibus: et sicut apparet de Tigribus, quae venerunt ad locum praelii, quod accidit in terra Grecorum a remotis regionibus.* See Averroes, commentary on *De anima*, by

- Aristotle, II.5, in *Libri Omnes* (Venice: Juntas, 1550), 6:146r. The example seems to originate in Avicenna's *De anima*, where the animal is *avis tigris*, the tiger bird.
- 57 Palmer, "In Bad Odour," 62.
- 58 According to the index of Van Riet and Verbeke's edition of Avicenna's *De anima*, the Arabic equivalent in that text for Latin *vapor* is *bukhār*, while *fumus* is *dukhān*. There were, then, different terms for "fume" and "vapor" in use in Arabic philosophy.
- 59 Isaac Israeli, *De dietarum universalium*, lectio 20, 48r.
- 60 The similarity between this argument and Nemesis of Emesa's in *De natura hominis* suggests that either Isaac had read Nemesis's work, which was translated into Arabic, or that they shared a common source, such as Theophrastus's *De odoribus*, which also divided odors into more than two basic types.
- 61 Isaac Israeli, *De dietarum universalium*, lectio 20, 48r.
- 62 Averroes, *Colliget*, II.17, 26r–v.
- 63 Ibid., III.34 and 36, 51v–52r.
- 64 Ibid., III.36, 52r–v.
- 65 Dag Nikolaus Hasse, *Avicenna's De Anima in the Latin West: The Formation of a Peripatetic Philosophy of the Soul, 1160–1300* (London: Warburg Institute, 2000), esp. 73–79.
- 66 *Olfactus autem fit a duabus carunculis, quae sunt in prima parte cerebri, similibus mamillarum capitibus*. Avicenna, *De anima*, V.8, 2:181.
- 67 Ibid., II.4, 1:146–47.
- 68 *[C]um diu odoraveris pomum, marcescet propter multum quod resolvitur ex illo*. Ibid., 1:148–49. This illustration was frequently repeated in European discussions of smell: Hasse found it in six different sources by five different authors of texts written between 1160 and 1300 (Hasse, *Avicenna's De Anima*, 267).
- 69 *[S]i odores qui replent spatia magna fierent ex resolutione alicuius, oporteret ut odoriferum fieret minoris ponderis et fieret parva eius quantitas propter resolutionem eius quod solvitur ex illo*. Avicenna, *De anima*, II.4, 1:148–49.
- 70 Ibid., 1:148.
- 71 Ibid., 1:149–50.
- 72 Ibid., 1:150–52.
- 73 The example of the carrion birds, which medieval authors often called vultures, is a favorite example of scholastic authors writing about olfaction. Hasse found it cited in nine different works by seven different authors between the mid-twelfth and the beginning of the fourteenth century, and it continued to be cited after 1300. Hasse, *Avicenna's De Anima*, 267–68.
- 74 *[S]unt duo additamenta mammillaria, quae sunt in anteriore cerebro*. Avicenna, *Canon*, III.5.1.1, 1:578.
- 75 *[R]ecipiet medicus quod odor est in radice per [conversionem] aliquam in aere, secundum, viam dilationis, deinde adiuvat ipsum [acuitas vaporis, ex eo, quod habet odorem]*. Ibid.
- 76 Avicenna, *Canon*, II.1.3, 1:250–51. The idea that odors caused headaches was a commonplace of medieval medicine. See Luke Demaitre, *Medieval Medicine: The Art of Healing, from Head to Toe*, Praeger Series on the Middle Ages (Santa Barbara: Praeger, 2013), 186–87.
- 77 *Quidam tamen arbitrati sunt vias in naso apparentes esse odoratus instrumentum: quia oppilatis naribus nullus sentitur odoratus: et si aperiantur ilico sentietur. Sed falsa est eorum opinio: he enim tantum ad proram cerebri ferunt odoratum. Duo frustula*

uberibus similia odoratus sunt instrumenta: que usque ad colatorium descendunt ubi dura mater est perforata: et similiter super eam extrema uberum usque in ventriculos prore cerebri pertingentia. Odoratus sic efficitur. Fumus odoriferorum corporum dissolutus et cum aere mixtus per narium foramina ab uberibus trahitur: qui per uberum pertusationes cerebro transmittitur. Constantine, *Pantegni*, III.15, 11v.

78 *Fumus vero inter terrestria et aquosa se habet.* Ibid., IV.10, 17r.

79 Eastwood, “Galen on the Elements of Olfactory Sensation,” 277.

80 See Haly Abbas, *Liber regalis*, III.15, 35v–36r; IV.10, 48r; IV.13, 48v.

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2 Odor is a fumous evaporation

The medieval anatomy and physiology of smell

Central medieval authors drew their initial interpretation of the sense of smell from translations of Arabic works, particularly those of Haly Abbas and Isaac Israeli, both translated by Constantine the African. By the time Aristotle's texts became available in the twelfth and thirteenth centuries, medieval scholars had already accepted the Galenic-Arabic location of the sense organ in the brain and a Galenic understanding of the nature of odor as they found it in Arabic works. Aristotle complicated the discussion of olfaction primarily with his argument that odor was mediated and reached the sense only as an insubstantial quality. Although he defined the nature of odor differently and more precisely than the Arabic authors following Galen had done, his distinction between vapor, made of water and air and odorless, and fume, made of air and earth and capable of mediating odor, went largely unrecognized during the Middle Ages. Latin scholars readily repeated Aristotle's assertion that odor was a fumous evaporation alongside Galenic-Arabic descriptions of vaporous odor, sometimes summing it up (as had Averroes) as a "fumous vapor."

How scholastic authors added Aristotle into the Arabic account of olfaction is due in part to the fact that Arabic texts already incorporated elements of Aristotle. Medieval authors only needed to follow the groundwork laid by Arabic authors to find a path to reconciling Aristotelian with Galenic-Arabic olfaction. Galen himself had also incorporated some of Aristotle's ideas into his work, particularly the capability of odor to heal or harm the brain. The Arabic texts reveal still more of Aristotle's arguments, including the two categories of odors (those good or bad in themselves and those related to flavors), the weakness of the human sense compared to that of animals, and sometimes the mediation of odor in species. Like Arabic scholars, most, although not all, medieval Latin scholars left aside the specifics of the creation of odor through the flavored dry, which relies heavily on Aristotle's poorly understood description of the nature of odor. They did, however, embrace the general concept of mediation, arguing, along the lines of Avicenna's discussion in *De anima*, that odor itself was an immaterial species, but odor as it physically existed in fumous vapor could effect physical change in physical things, particularly the human brain. By the end of the thirteenth century, the standard explanation

of the mechanics of smell had been established as a fusion of Galenic-Arabic olfactory physiology with elements of Aristotle's descriptions of odors. After the thirteenth century, medieval introductions to the olfactory sense changed little except in emphasis. In the fourteenth and fifteenth centuries, philosophical texts included more discussion of the mediation of odor in species than the physical powers of odors. Medical texts, however, continued to give the standard thirteenth-century account and to emphasize the powers of odors on the human body.

Twelfth-century anatomy and physiology

Before the twelfth century, there was a general idea that the sense organ of smell was the nose. The senses were largely discussed in theological contexts and following the lead of patristic authors such as Ambrose and Augustine, who did not question that the organ of smell was the nose or concern themselves much with questions about the physical working of the sense or the nature of odor. Twelfth-century authors were the first to adopt Arabic answers to these questions, and they largely drew them from Constantine's *Pantegni*, which had been translated into Latin in the late eleventh century.

Despite the fact that the *Pantegni* was the most common source of Arabic smell theory in the twelfth century, not every author's information can be easily traced back to Constantine. William of St.-Thierry (c. 1085–1148) was unmistakably reading the *Pantegni*, but it is more difficult to say which Arabic source Adelard of Bath (c. 1080–c. 1152) was reading, probably because he acquired information directly from Arabic rather than from Latin translations. Similarly, the word choice of William of Conches (c. 1100–c. 54) most likely points towards Constantine but has hints of Avicenna, whose works should not have been available in France until the thirteenth century. Finally, not all twelfth-century authors were aware of the Arabic tradition, or at least they did not implement it in their works on the soul. For example, Ælred of Rievaulx (1110–67) adopts an Augustinian formulation of the senses in his *De anima* that has the nostrils as the sense instrument of smell.¹ His work betrays no awareness of Arabic treatises on the senses, although his fellow Englishman and older contemporary Adelard of Bath incorporated the Arabic physiology of smell into the *Questiones naturales*, a text that spread widely soon after it was written.² However, despite some holdovers, Arabic physiology quickly surpassed other options in texts that discussed the sense organs.

Adelard of Bath translated works of geometry, astronomy, and astrology from Arabic into Latin.³ Because of his knowledge of Arabic, scholars have struggled to pinpoint Latin-translated Arabic sources for his *Questiones naturales*, which is a work of natural philosophy set up as a dialogue between Adelard and his nephew. The *Questiones* exist in thirteen twelfth-century manuscripts from both England and Continental Europe. They were used in Paris and Chartres (including by William of Conches) and continued to be

copied into the fifteenth century, although their most influential period was the twelfth century.⁴

In his edition of the text, Charles Burnett highlights the difficulty scholars have had in locating direct Arabic parallels to Adelard's text despite the author's statement that he was writing what he had learned from Arab scholars. As Burnett points out, Margaret Gibson argues that Adelard may have attributed more controversial opinions of his own to the Arabs as a way to distance himself from those views. Burnett also suggests that the main sources for some of Adelard's Arabic-seeming arguments were actually Plato's *Timaeus* and Cicero's *De natura deorum*.⁵ However, he also acknowledges that Adelard probably studied under Arabic-speaking masters during his travels in Antioch and perhaps in Europe, especially in the areas of mathematical and astronomical knowledge.⁶ He adds that "some of the arguments concerning questions of natural science could well have been picked up in conversations with Arabic scholars, especially those that have a distinctly Aristotelian ring to them."⁷ Adelard's explanation of the sense of smell shows unmistakable Arabic influence, but in a Galenic rather than Aristotelian vein.

Adelard argues that smell, taste, and touch sense through direct contact of the sense object with the organ. The instruments of these three senses are more temperate than any other body parts, and sensation occurs when something from outside—a sensible—unbalances the natural moderation of the sense.⁸ When the sense organ is distempered, the soul perceives the outside object according to the change in the organ. Regarding olfaction, Adelard explains that "to create a smell, the air which is affected by the smell comes into contact with certain little teats [*mammulis*] dangling a little from the brain which are the instruments of this sense."⁹ In Adelard's formulation, then, air is changed by odor and subsequently carried to the instruments of smell, which are the olfactory breasts. The odorous air unbalances the nature of the instruments so that odor is perceived.

That Adelard was familiar with the Arabic tradition on the sense of smell is certain from his designation of the sense organ as little teats or breasts, *mammulae*. However, his Latin makes it impossible to identify a Latin translation of an Arabic work as his direct source. As we have seen, nearly all Arabic sources commonly cited by medieval European authors speak of little breast-like protuberances from the brain as the organ of smell. They also describe one of the functions of the nose as draining superfluities of moisture from the brain, as does Adelard.¹⁰ The *Pantegni* and the *Liber regalis* were the main Latin sources for Arabic ideas on smell available in the twelfth century, but Adelard's language matches neither. He may have read an Arabic text directly or, as Burnett argues, he may have gleaned the physiology of smell from conversation with Arabic speakers.

While it is difficult to identify a source of Adelard's information, William of St.-Thierry's *De natura corporis et animae*, a work he composed around 1140, clearly paraphrases Constantine's *Pantegni* to describe the senses.¹¹ Leaving aside his use of Arabic medicine throughout the work, it is clear from

William's Latin that he was reading the *Pantegni* for information about the sense of smell. His overview comes entirely from Constantine. He explains that the purpose of the nostrils is to draw air and odors towards the brain and to drain coarse superfluities originating in the brain. They are not the sense organs of smell, which are instead "two small organs similar to breasts" (*duo enim frustula uberibus simillima*) with their tops near the *dura mater* and their bottoms at the tops of the nostrils. Smell perception occurs when fumes resolved from odoriferous objects that have been dissolved and mixed with air are drawn to the breasts. The breasts "change the fumes ... into their own nature. The mind senses this change and thus the sense of smell is produced."¹² When the brain breathes, it not only senses odor but is refreshed by the inhaled air and expels "superfluous fumosity" that would otherwise harm it.¹³

William of Conches also provides an Arabic account of the sense of smell. His early work *De philosophia mundi* does not treat the sense of smell, although he cites Constantine on the brain. He gives smell little space in the later *Dragmaticon* (c. 1147–49), but what he does say reflects Arabic influence. William explains that air picks up the odors of things that it touches, and then the odor-carrying air is breathed into the human brain, where "small pieces of flesh [*carunculae*], which extend from the brain [*prodeunt*], hang down rather like small teats [*in modum mamillarum*]."¹⁴ These, the olfactory sense organs, contain a nerve that carries information about odors to the brain, and the odor information goes to the logistic cell, the middle cell of the brain that makes judgments based on sensory input.¹⁵

William of Conches's choice of words makes it more difficult to pinpoint his source than William of St.-Thierry's language does. Words related to *caruncula* and *mamilla* appear together only in Avicenna and Averroes. Averroes was writing his works towards the end of William's life, and they did not become available in Latin translation until the thirteenth century. Likewise, Avicenna's texts are not thought to have reached beyond Spain until the thirteenth century.¹⁶ Algazel's *Physica* uses *caruncula*, but the text was not translated into Latin until after the *Dragmaticon* was written.¹⁷ The *Liber regalis* describes *augmenta duo uberibus similia mammarum*, "two added teats similar to breasts," so it could have influenced William.¹⁸

However, Constantine's text is the most likely source of William's information, even though Constantine uses *frustula* instead of *caruncula* for "little pieces of flesh." A chapter of the *Pantegni* that briefly reviews the sense of smell mentions that *huius instrumenta duo diximus esse frustula a cerebro prodeuntia mamillis assimilantia*, "we said its instruments are two little pieces of flesh similar to breasts extending from the brain."¹⁹ Both William and Constantine use *mamilla* and *prodeo*, which points to Constantine as William's source.²⁰

Thirteenth-century anatomy and physiology

In the late eleventh and first half of the twelfth century, the Galenic-Arabic account of olfaction, particularly as it was received through Constantine's

Pantegni, was at the cutting edge of medical and philosophical knowledge and began to displace the traditional understanding of the sense of smell, which was upheld by authors such as Ælred of Rievaulx. By the later twelfth and thirteenth centuries, translations of more Arabic texts and of Aristotelian works on the senses complicated discussions of smell. These translations made the *Pantegni* a less central authority on the senses. While Constantine is still cited, Haly Abbas also appears frequently as an authority in thirteenth-century sources. Use of his name rather than Constantine's signals citation from the *Liber regalis* translation. Avicenna also became a favorite source of information, and Isaac Israeli's argument about the types of fumes nuanced the division of odors.

These are not the only Arabic authors cited as authorities on smell. Whereas twelfth-century writers such as William of St.-Thierry often drew their information from one source, thirteenth-century authors expanded their source bases considerably to include a wider assortment of Arabic, Greek, and traditional theological sources in scientific discussions of smell. For example, in *De homine*, Albertus Magnus (c. 1200–80) uses six different Greek and Arabic authors to support his own contention: Aristotle, Avicenna, Algazel, Nemesius of Emesa (fl c. 400), Constantine, and Constabulus (Costa ben Luca; 820–912). Vincent of Beauvais (c. 1190–c. 1264) cites a variety of authors on smell in *Speculum naturale*, including a large chunk of information that was lifted from Albertus's work but also adding Isaac Israeli, Haly Abbas, and William of Conches. The encyclopedia written by Bartholomew the Englishman (c. 1203–72) cites Arabic authors such as Isaac, Avicenna, and Constantine but also mixes in information from other medical textbooks (Galen's *Prognostics* and the Hippocratic *Aphorisms*) as well as Christian authors such as Ambrose (337–97) and Gregory the Great (c. 520–604).

Texts by Aristotle likewise added to medieval Latin understanding of the sense of smell. The idea of the olfactory breasts as the sense instrument was reinforced by newly available Arabic texts and unquestioned by European authors, but Aristotle's theory of mediation sometimes muddies the discussion of odors. Most notably, Albertus Magnus merges Galenic-Arabic arguments about the organ of smell with Aristotle's mediation, both in species and in the flavored dry. Vincent of Beauvais repeats Albertus's findings, but most authors chose to ignore Aristotle's difficult proposal regarding the flavored dry. For example, Peter of Spain (1205–77) briefly touches on Aristotle's assertion that odor is in the "vaporous dry" but makes no attempt to explain what that means. Finally, discussion of the nose as the olfactory instrument in any serious philosophical inquiry—except to disprove that this is the case—is nearly obsolete by the thirteenth century, despite Averroes's argument on the side of Aristotle.

Albertus Magnus is the first author who grapples with Aristotle's explanation of the mediation of odor, and he provides the most comprehensive overview of the sense of smell of all medieval authors in the *De homine* portion of *Summa de creaturis* (1240s). He is also the first author to present

a near-complete version of the standard medieval account of olfaction. He treats the sense instrument, the weak human sense, the complex issues surrounding the qualities and nature of odors, the medium, and the role of respiration in smelling. While he prefers Arabic accounts of the sense organ, he modifies other parts of Galenic-Arabic olfaction by incorporating elements of Aristotle that the Arabs and Galen had left out.

Although Aristotle is an authority whom Albertus wishes to incorporate further into Galenic-Arabic olfaction, he does not accept theories of Aristotle that contradict already-accepted Arabic theory. However, rather than rebuking Aristotle, Albertus reconciles him with the Arabic authorities. For example, on the organ of smell, he firmly supports the Galenic-Arabic account, but he also highlights moments when Aristotle was near to acknowledging the brain as the sense organ. He relates that, "according to the authorities, namely Avicenna, Constantine, and Gregory [of Nyssa; actually Nemesius of Emesa], the olfactory organs are immediately in the brain. Even Aristotle wished to say it in *De sensu*."²¹ Although Aristotle never gave explicit consideration to the brain as the sense organ for smell, Albertus notes that, in *De sensu* 5, he suggests that it is in the brain when he argues that the natural heat of odor helps to keep the natural coldness of the human brain in check.²² For Albertus, the sense organs themselves are the Arabic olfactory breasts (*additamenta mamillarum*, drawn from Avicenna's *Canon*) located in the anterior part of the brain. He notes that they have this name "because they are similar to the cone shape of breasts," which is a description found in no Arabic source. Furthermore, he explains that the olfactory organs have eyelid-like coverings that are lifted by incoming air, which was an assertion of Aristotle.²³ Thus, while Albertus's position on the sense organs is primarily Galenic-Arabic, he adds both Aristotelian theories and his own interpretation of olfactory anatomy. This approach is characteristic of his explanation of smelling throughout *De homine*.

Although Albertus never entertains the notion that the nostrils are the sense organs, he affirms that the olfactory organs must be in the brain because of the necessity of odors to the health of the human brain:

Odor, according to the material and natural being that it has in the vaporative dry, is healthy for the brain. Therefore, it is necessary that [odor] extend to the brain in its matter and not only through sensible species separated from matter, as happens with the other sensibles. If the ordained power were in a hollow nerve carrying spirit towards the smelled thing, that spirit would not receive an impression except of the species without matter—but the species separated from matter, which may be neither hot nor cold, would not help the brain.²⁴

Aristotle, Galen, and the Arabic authors all agreed that odors heal the brain. The Galenic-Arabic account usually elected to explain odor perception through direct sensation of odorous vapor mixed with air and breathed in,

so the fact that odors healed the brain required little explanation. However, Aristotle is clear that odors, as they are perceived, are immaterial. Immaterial species should not be able to heal the brain. Albertus resolves the contradiction in Aristotle by implementing the concept of the material nature of odor in the flavored dry, which he terms the “vaporative dry.” He explains that “vaporiferous odors” have a mixed nature, which is important to the ability of the material to carry odor in Aristotle’s scheme, since simple elements do not have odor. Air mixes with the vaporiferous odors and, through the heat of the vapor, it takes on the light texture necessary to penetrate the sense organs.²⁵ Because odor exists in this material form, it is able to heal the brain, and therefore the matter of odor must touch the brain.²⁶ It would not be able to do so if odor were perceived through a spirit-carrying nerve, because spirit can only transmit species back to the sense organ.

Albertus goes beyond the bounds of his sources when he argues that some matter must reach the brain in smelling because the species of odor, which is information without matter, could not carry heat to the brain. While Isaac Israeli implied that odor was both mediated and material and Avicenna had argued that odor could be sensed both ways, neither author gave the explanation for this dual state that Albertus does. Furthermore, Aristotle did not address the question of how odors help the brain. The reason Albertus does is because he wants to accept both Aristotle’s account of mediation and the power of odors to heal the brain that Aristotle, Galen, and the Arabic authors all accepted.

Albertus asserts that odor is both a simple quality and a composite substance, depending on how it is being considered. The composite substance of odor is made up of matter from the odoriferous object that has been transformed into the vaporative dry and mediated through air or water. This is the physical nature of odor as it exists in its subject, vapor. It is capable of balancing the brain and even of nourishing the spirits in the brain, which was an argument of Galen and the Arabic authors. However, properly speaking, odor in itself, which is the odor that affects the sense organ, is only the species of odor, the sense information carried in the vapor without any of the matter.²⁷ Thus, Albertus is able to incorporate Aristotle’s concept of species into his account of smell perception while keeping the power of odors to physically affect the body, which is found in both Galenic-Arabic texts and Aristotle.

Albertus is the first scholar to incorporate Aristotle’s theory of the flavored dry into olfaction, and he seems to understand it more than any medieval author, with the possible exception of Pietro d’Abano. He does associate vapor with dryness, but probably because of mistranslations and misunderstandings of both Arabic and Aristotelian texts. However, while he usually terms odor a vapor, Albertus uses *fumus* when he considers questions drawn from Aristotle’s *Meteorologica*, which he uses to explain how odor is created from exhalation, vapor, and fume.²⁸

In explaining the differences among fume, evaporation, and exhalation, which are all terms for odors, Albertus notes that Aristotle calls odor a fumous evaporation and that fumous evaporation comes from fire. Fume, vapor, and

exhalation arise from the earth when it is acted on by exterior heat. Although fume does not always have an odor in Aristotle's worldview, Albertus defines fume as "dry earth that is mixed with the vapors of odors. Indeed, fume is a vapor of the earth, as Aristotle says in *Meteorologica*."²⁹ His explanation of vapor merely notes that it arises when it is elevated by exterior heat, since Albertus treats it as a term interchangeable with fume.

Exhalation, however, receives more detail: "Exhalation exists inasmuch as its natural heat is drawn out by exterior heat, and with that natural heat the dryable moist [*humidum siccabile*] [is drawn out]."³⁰ Albertus directly connects exhalation with odor, just as he does fume. Instead of the vaporized dry, the flavored dry appears here as the dryable moist, which makes sense in the context of Aristotle's assertion that the similar moist quality of air and water might be the reason they can both mediate odor.³¹ It also accords well with the appearance of the flavored dry as the enchymous, or moistened, dry in medieval translations of Aristotle.³²

Since all of these things—vapor, fume, heat, and exhalation—are related to odors and the production of odor, Albertus explains that odors can properly be called fumes, evaporations, and exhalations. Aristotle himself would not have agreed that odors could be properly called any of these names. Even in this passage based on *Meteorologica*, Albertus fails to recognize the distinction Aristotle made between watery, odorless vapor and earthy, odor-carrying fume. Instead, his account of the nature of odor merges Galen's vapor, which can contain many elements, with Aristotle's account of the vapor and fume that rise from the earth in *Meteorologica*. The passages above, particularly "fume is a vapor of the earth," also demonstrate the problem of a lack of distinction between vapor and fume in the first medieval translations of Aristotle. Despite this obstacle, Albertus works to assimilate the flavored dry with Galenic-Arabic olfaction.³³

Albertus singles out, reconciles with Arabic accounts, and logically explains other aspects of Aristotle's account of smelling as well. In his argument about the relative strength of the human sense of smell, Albertus notes that Aristotle found two types of pleasing odors, those related to food and those that are pleasant in themselves. Arabic sources also typically discussed these two types of odors. Since only humans perceive the second class of odors, Albertus points out, it could be argued that humans smell odors more accurately than any other animal. However, all authorities agree that man perceives odors the worst of all the animals. Albertus explains that this is because of the superiority of the human brain. The cold and moisture of the human brain make it better able to retain information than the brains of other animals, but the same qualities make it difficult for odors, which are hot and dry, to affect it. Therefore, even though humans can elicit odors by rubbing things better than other creatures can (an assertion of Avicenna in *De anima*), man only senses extremely hot and dry odors very well, and even these do not form strong impressions in the imagination, the part of the brain that stores sensory images.³⁴

Albertus not only makes his own contributions to the explanation of olfaction but also introduces his own terminology for the olfactory bulbs. As we saw in *De homine*, he makes Avicenna's *additamenta mamillarum* clearer by describing the shape as *similia ... conis mamillarum*.³⁵ In his *Sentences* commentary, he leaves out Avicenna's terminology, saying that the organs of smell are "two cones of the brain [*duo coni cerebri*] in the anterior part of the head, similar to the cone shape of breasts [*ad modum coni mammillae*]."³⁶ In *De animalibus*, Albertus uses another new phrase when he writes about the organs of smell as "two nipples [*papulas*], which are similar to the nipples of breasts [*papulis mamillarum*]."³⁷ This last description of the olfactory organs went on to influence the terminology of later authors, including Gabriele Zerbi (1445–1505), Ludovico Ricchieri (1469–1525), and Andreas Vesalius (1514–64).³⁸

In contrast to Albertus Magnus, Vincent of Beauvais includes little of his own opinion on questions of olfaction in *Speculum naturale*, a part of his *Speculum maius*, which was one of the most influential medieval encyclopedias. This work, amassed between about 1240 and 1260, is made up of quotations on various issues from various authors, more or less condensed. In the final version, Vincent deals with smell in two books: book four, which is about the fire, clouds, and air in the atmosphere, and book twenty-five, which is about the senses.³⁹ Vincent's inclusion of questions on odor and olfaction in book four indicates that the Aristotelian account of smell that links it with the fume (or vapor) arising from the earth had become or was becoming a part of the medieval discussion of that sense, perhaps through Albertus's influence. Here, Vincent establishes that fume, exhalation, and evaporation as well as vaporization are terms related to odor by quoting Albertus. He goes on to provide a long quotation from Isaac Israeli on the types of fumes. Isaac postulates three types of fumes, one that is still and has no odor, a second that is fast-moving and strongly scented, and a third between these extremes. The second type can be good-smelling, if its qualities are properly balanced, or bad-smelling if they are imbalanced. The bad-smelling fume can be either heavy or fetid, and these stenchs are caused by either unnatural heat or putrefied humidity.⁴⁰ In this section, Vincent quotes William of Conches on the sense instruments.⁴¹

From Albertus, Vincent slightly condenses arguments on whether odor is simple or composite, whether it is constituted in hot and dry vapor, the role of evaporation in producing odor, and the differences between flavor and odor. In book twenty-five, Vincent again draws on what Albertus said in *De homine* for almost the entire section on smell, including the organ, the hot and dry nature of the organ, the flavored dry as the object of smelling, air and water as its mediums, olfaction in breathing and non-breathing animals, man's weak sense of smell, and the fact that only humans smell odors that are pleasant in themselves. He does, however, re-cite William of Conches and add Haly Abbas on the sense organ.⁴² Uniquely, he brings in John of Damascus (c. 675–749) as an authority on the vaporous nature of odor: "Smelling is a

sensitive force susceptible to vapor.”⁴³ Like Albertus, Vincent makes no distinction between vapor and fume, although some of the authors he cites are more precise.

Bartholomew the Englishman’s *De proprietatibus rerum*, written about 1240, was another extremely successful medieval encyclopedia. It is a synthesis of ideas rather than a collection of quotations. His main sources on smell are the *Liber regalis* translation of Haly Abbas and Isaac Israeli’s *Liber dietarum universalium*, but he also cites Constantine, Avicenna, Galen, and Aristotle among philosophical and medical authors. Additionally, he draws from a larger number of theological sources than Vincent does, including Gregory the Great, Ambrose, and the *Sentences*, and he also cites Isidore of Seville and Pliny. Bartholomew’s relatively concise and simple explanation of olfactory theory became one of the most influential sources for later medieval theological authors who wished to incorporate contemporary philosophy and medicine into religious thinking about the senses.

Bartholomew discusses smelling and odors in book three, which is on the soul; in book five, which is about the members; in book ten, on the properties of matter and forms; and in book nineteen, on accidents (i.e., the qualities of objects such as odor and color). His brief summary of olfaction in the third book touches on most of the main arguments about smell and some of the more significant abilities of that sense. While his language on the sense organ matches William of Conches’s, the information in the passage is far from a simple paraphrase of William’s position on smell and could have been drawn from Haly Abbas, Constantine, William of St.-Thierry, or some combination of them. Bartholomew outlines the nose’s role in olfaction and the way that the breast-like pieces of flesh go about sensing odors. First, outside the body, odoriferous objects release fume when they are heated, and that fume mixes with the air. Then the animal spirits in the brain go into the olfactory nerves that are within the olfactory breasts (despite Albertus’s argument that the brain senses odors with its own nerves). The olfactory breasts, which are hollow and spongy, contract to draw in air in the same way as Galen, Constantine, and Haly Abbas explained the brain contracting to draw in air. The ventricles of the brain read the air as it comes in through the animal spirit in the olfactory nerves, and it is sensed. This overview of smell seems to suggest direct perception of odor, although the inclusion of the olfactory nerves may imply that the brain only senses species.⁴⁴

However, Bartholomew never discusses odor as an immaterial quality, even though he cites Aristotle on other aspects of the sense of smell. Bartholomew’s account of odor is Galenic-Arabic. Immediately after describing the sense organ, he reviews the fumous nature of odor and its effects on the brain and body. Although he uses “fume” as well as “vapor,” in this case the word choice signals his reading of translations by Constantine, such as the *Pantegni* and Isaac Israeli’s *Liber dietarum universalium*. Bartholomew recognizes that the fumous or vaporous matter mixed with air that produces odor can be either properly balanced or corrupt. Properly balanced odor will be hot, dry,

and subtle (fine in texture), and it strengthens both the brain and the heart. Corrupt fume or vapor is too cool, too hot, too humid, or too coarse, and can cause a variety of problems for the entire body, including pestilential illness.⁴⁵ Elsewhere, citing Isaac, he notes that the human sense of smell only senses the extremes of odor, aromatic and fetid, but that bad smells are divided into heavy, which stinks less, and fetid, which stinks more.⁴⁶ He speaks of fume or vapor or fumous vapor as being mediated in air; however, he never explains the mediation of odor in the Aristotelian sense.⁴⁷

Peter of Spain discusses questions surrounding olfaction and odors in detail in his commentary on Isaac Israeli's *Liber dietarum universalium*. Peter explains Isaac's reasoning on the usefulness of odors in determining the qualities of food, on his assertion that humans only smell extreme odors, and on the types of fumes. In addition, he complicates Isaac's account by drawing in questions and arguments of Aristotle, Galen, Hippocrates, Constantine, and Haly Abbas on various points as well as asking current medieval questions, primarily regarding how aromatics such as roses, violets, and camphor could be cold and, in the case of roses, humid when odors were by definition hot and dry. His argument blends Galen with Aristotle in the same way as Albertus Magnus's discussion of smell. This fusion is also a feature of Isaac's text, however. Like Isaac, Peter does not give space to discussing the sense instrument, merely noting as part of a different question that the sense instrument is in the anterior part of the brain, far from the nostrils. In his commentary on Aristotle's *De animalibus*, he calls the sense organ "two pieces of flesh [*caruncule*] in the nostrils."⁴⁸ In the commentary on Isaac's text, however, his attention is instead focused on questions of what odor is, in particular whether it is a quality (and thus entirely spiritual) or a material substance, whether it nourishes the animal spirit and the brain, and the types of odors and their effects on the brain.

Considering the question of what odor is, Peter lays out the arguments for odor as a material substance and as an immaterial quality. He may have been influenced by Albertus's discussion of whether odor is simple or composite. Like Albertus, he argues that food contains both the flavored humid and the vaporous dry, which is the nature of odor. He cites Aristotle's statement that odor is a fumous evaporation. He also quotes Galen's assertion that odor nourishes the animal spirit. Following Aristotle's definition of nourishment, he argues that nothing that nourishes can be simple or immaterial, so odor must be composite and material. On the other hand, Avicenna argues that the senses only perceive qualities, which would mean that odor by itself is a quality. Peter concludes that

there are two ways of talking about odor. The first focuses on its formal nature, and thus it is a quality, because thus it changes the sense; the other way focuses on the substance carrying odor, and thus odor is called a fume of a substance carrying this quality.⁴⁹

Although he cites different authors, Peter has come to the same conclusion as Albertus: that odor is both a quality and a substance. In the first form it changes the sense, and in the second it nourishes the animal spirit. He adds that odor is not the only natural phenomenon that exists in these two ways. Galen argues in the commentary on the Hippocratic *Aphorisms* that natural heat is considered both a quality and a fine, hot substance. Similarly, he points out that, according to Haly Abbas, the heart produces two types of substances: hot, dry spirit and hot, humid natural heat. Since both odor and spirit are hot, dry, finely textured substances, odor is ideal for strengthening and nourishing the spirit.⁵⁰ Finally, while Albertus argued there had to be some matter in odor because of the need to heat the brain and the fact that odor induces hunger, Peter focuses on the nourishment of the animal spirit, which, according to Aristotle's definition of nourishment, requires matter. Avicenna had argued in *De anima* that the senses would perceive material things even without species, which nullifies the problem of how odor nourishes. However, because of Aristotle's influence, neither Peter nor Albertus accepted that premise, which led them to find another way to reconcile the Galenic-Arabic account of olfaction with Aristotle.

Since odors do affect the animal spirit and the brain, their types are important. Just as Isaac argues, Peter asserts that there are three types of fume, two of which produce odor. The odoriferous fumes are of two types, either delightful or horrible. Fume of horrible odor occurs either because of unnatural heat or rotten humidity, while good-smelling fume is pure, temperate, and delightful to the animal spirit. There is also a third type of odoriferous fume, which falls between the two extremes but is still perceptible by the human olfactory sense. It is less strongly scented and may be either stinking or good-smelling but has a lesser effect on the animal spirit than the other two. Good, aromatic odors can balance the whole body by refreshing the animal spirit.⁵¹ Peter of Spain's account of olfaction is, then, similar to Albertus Magnus's Aristotelian spin on Galenic-Arabic olfaction.

Any thirteenth-century author discussing any of the senses might mention the olfactory organs and some of the issues surrounding odor. For example, in *Perspectiva*, Roger Bacon (1220–92) explains that the olfactory sense organs (*duas summitates uberum*, “two very tops of breasts”) are nearer to the brain than the visual nerves “because it is absolutely necessary for the brains of animals to be fortified by odour,” and especially the human brain.⁵² Later, he notes that odor works through both immaterial species and material fumes that come from an odoriferous body, although only the species touch the sense organ.⁵³ Other authors, such as Thomas Aquinas (1225–74), have little to say about olfaction. Thomas probably knew what the olfactory sense organs were because when he comments on Aristotle's *De sensu*, he is careful not to call the organ the nostrils, but at the same time, he does not explain that it really is two pieces of flesh in the brain similar to breasts.⁵⁴

The anatomy and physiology of smell after the thirteenth century

Thanks to translations and investigations of the sense of smell by earlier authors, there was a substantial base of information available to scholars interested in questions of odor by the fourteenth and fifteenth centuries. However, few innovations in the medieval understanding of the mechanics of smelling developed after the thirteenth century. Indeed, sources from the fourteenth through mid-sixteenth century reveal versions of the standard account that developed in the thirteenth century. What stand out most are refinements that developed from a closer examination of Aristotle, primarily a more Aristotelian emphasis on the spiritual nature of odor in the medium. Pietro d'Abano (c. 1257–1316) in his *Conciliator* both accepts and rejects portions of Aristotle's arguments. He refutes Averroes's unpopular Aristotelian argument that the nose is the proper instrument of smell and argues, contrary to Aristotle, that odor is nourishing. However, he also implements Aristotle's definition of the nature of odor in the flavored dry and acknowledges that Aristotle argues *against* fumous evaporation being the nature of odor. Philosophical texts such as the *De anima* commentary of Jean Buridan (c. 1292–c. 1361), the *Tractatus de anima* of Pierre d'Ailly (1351–1420), and the university textbook by Gregor Reisch (c. 1470–1525) are especially Aristotelian in their accounts of olfaction. Still, even for these authors, the sense organ has not changed and odor retains its physical nature and powers even though the sense itself only perceives the species. Books designed for physicians rather than theologians, such as Gabriele Zerbi's early sixteenth-century anatomy text, maintained a more Galenic-Arabic account. They also show more interest in the physical nature of odor and its powers, which seems to have dropped out of most non-medical accounts of olfaction by the mid-fourteenth century. In the mid-sixteenth century, Andreas Vesalius finally offers a challenge to the olfactory breasts as the organ of smell, although he has nothing to say about the nature of odor. However, Vesalius's rejection of the traditional olfactory organs did not have an immediate impact. The annotations to Avicenna's *Canon* by Giovanni Costeo (1528–1603) and Giovanni Mongio and a medical text by the Dutch physician Ijsbrand van Diemerbroeck (1609–74) both continue to use traditional terminology for the nature of odor and for the sense organs. Thus, the medieval account of olfaction was the foundation of early modern olfactory theory at least into the seventeenth century.

Pietro d'Abano's *Conciliator*, finished after 1310 and intended to reconcile disagreements among philosophers, addresses two questions related to smell. First, Pietro asks what the olfactory organ is, and, second, he examines whether odor is capable of nourishing by itself. The problem of the olfactory organ would appear to have been settled long ago, except that Averroes's *Colliget*, which had become available in Latin translation in the first quarter of the thirteenth century, argues against "Galen's" assertion that the olfactory breasts are the sense organ. Averroes asserts instead that the nose is the organ of smell.⁵⁵ Pietro, therefore, sets Averroes and his Aristotelian arguments

against all physicians, represented by Haly Abbas, Avicenna, and Galen. The physicians, of course, are correct: the sense organs of smell are the olfactory breasts, and odor itself is either a vapor or a species.⁵⁶ Pietro does not attempt to settle the question of whether odorous vapor is physically mixed with air or whether an impression of the odor is made in the vapor, which accords with Avicenna's open-ended conclusion of the matter in *De anima* as well as the medieval belief that odor existed in both states. While he discusses odor as if it were a vapor here, Pietro generally terms it a fumous evaporation (*fumalis evaporatio*). He further undermines Averroes's position by noting, just as Albertus Magnus had, that "even [Aristotle] did not wish the nostrils to be the principal olfactory organ, receiving odors, but rather secondary, carrying odors [towards the brain]."⁵⁷ Rather than perception of odors, the role of the nostrils is to carry odors to the olfactory organs in the brain, as well as to temper the brain with air and to drain superfluities of phlegm.

The question of whether odor is nourishing seems to have grown out of the explanations of Albertus Magnus and Peter of Spain on the dual nature of odor. Pietro furthers their arguments to demonstrate the abilities of odor. Like these earlier authors, he notes that Aristotle says odor can balance the brain with its heat but it cannot nourish, and that Galen conversely argues that it does nourish the animal spirits. He begins his own argument by defining odor as the moistened dry. Odor is "the nature or form of the moistened dry" that is sensed in air or water through each element's ability to clean or wash the moistened dry (i.e., not because these elements are transparent but because they are "transodorable").⁵⁸ Pietro's inclusion of the moistened dry demonstrates that he was well-versed in the problems surrounding the sense of smell in contemporary philosophy and medicine, in Arabic texts, and in Aristotle.

Pietro goes beyond thirteenth-century explanations and reveals his own grappling with Aristotle's account of olfaction in *De sensu* when he points out that Aristotle argued against odor being a fume or fumous evaporation:

Know that the ancients commonly said that odor is a fumous evaporation. It is strange that many modern scholars attribute this idea to Aristotle since he fought against it, saying that animals smell in water, such as fish, and in air, such as the others. Fumous evaporation is a characteristic of earth and of air and not of water. Therefore, if odor were this, aquatic animals would not smell, because fumous evaporation is not able exist in water, whose passion is vapor, in this way. Nor is it possible to say that odor is a kind of effluence, because then it would not be appropriate to air, but only to water. But I say that if it is discovered that odor is common to both water and air, then the description appropriate to odor will be according to Aristotle's argument.⁵⁹

No other author acknowledges Aristotle's denial that odor is a fumous evaporation, despite the frequent reading of Aristotle's texts in universities. That

Pietro includes it indicates that, by the early fourteenth century, Aristotle's account of the flavored dry must have been well enough understood to allow him to recognize the Philosopher's distinction between odor as a quality and odor as a substance.

In addition to destroying the basis of the traditional short definition of odor, Pietro writes scornfully of Averroes's explanation of how odorous vapor comes to be: "In *Colliget*, book three, it is put, rather inappropriately, that to be vaporous is a passion common to all four elements. Even those following Averroes otherwise fight against the aforementioned description of odor."⁶⁰ Not only does this demonstrate that Averroes, who was otherwise revered as the Commentator, was uninfluential in his discussion of smell, but it suggests that there had been some change to the Galenic-Arabic conception of vapor that could carry any elemental matter and quality. Pietro comes close to Aristotle's distinction between fume and vapor when he asserts that vapor is proper to water. However, despite his acknowledgment of the problems in referring to odor either as fume or as vapor, he continues to use both terms for odor, primarily because he recognizes that Aristotle's account of olfaction is different from the medieval standard account, which is largely Galenic-Arabic.

After establishing the physical nature of odor and the sense instrument of olfaction, Pietro examines the problem of nourishment. The real question behind whether odor is nourishing is whether odor is more spiritual or more material. Pietro's solution puts odor in its usual place between the more spiritual sensibles of color and sound and the more material sensibles of taste and touch. He begins with an analogy of odor with color, arguing that, just as color has a twofold being consisting of its existence in the colored body and its transparent nature in the medium, so too odor has a corporeal and a spiritual nature. It touches the organ only as a species or intention. Thus far, Pietro's argument is the same as that of Albertus Magnus or Peter of Spain.

However, where Albertus emphasized that odors confer desire for food and Peter focused on the twofold natures of natural heat and substances that come from the heart, Pietro compares odor to other sensibles. Just like color, odor has a twofold nature, only one of which passes into the medium. However, the species of odor is *materialis fere*, "almost material," and similar in this way to the species of touch and taste.⁶¹ The proof is that many different varieties of colors and sounds can be sensed at the same time but not different varieties of odors.⁶² Thus, for Pietro, odor is more like taste or touch than the spiritual senses of vision and hearing. Hot and cold sensations are accepted to exist in the medium both materially and spiritually as species or intentions; therefore, it is possible for odors to exist in the medium for relatively long distances both materially and intentionally. In practical terms, Pietro's argument is essentially the same as those of the thirteenth-century scholars, because the sense itself only perceived the species of odor while the brain and spirits were strengthened by the matter. However, once again, his

explanation reveals a deeper consideration of Aristotle's theories of mediation. On the other hand, Pietro's belief that odor is able to nourish the spirits is contrary to Aristotle.⁶³

The fourteenth-century *De anima* commentaries of the nominalist Jean Buridan are an example of a more Aristotelian than Galenic-Arabic explanation of smell. Benoît Patar's edition of the *prima lectura* commentary (the first of three versions of Buridan's *De anima* commentaries) notes that the questions on odor and olfaction are included in nearly every manuscript.⁶⁴ In the commentary portion of the text, Buridan reaffirms Aristotle's assertions on smell: that the human sense of smell is weak because the brain is large and cold and odor is hot and dry, that smell is similar to taste, that odor is the dry digested in the humid, and that the olfactory sense has coverings in breathing animals.⁶⁵ He also emphasizes that real odor (i.e., fumous evaporation) is not sensed but rather the spiritual species of odor.⁶⁶ The latter point is the focus of his question on odor: whether odor is multiplied in the medium materially or spiritually.

Buridan argues that vapors or fumes are clearly resolved from odoriferous bodies, because if you smell an odoriferous thing such as an apple for a long time, it withers. In addition, fire is absolutely necessary in producing odor, because only when something is heated can the vapor or fume be released. However, fume itself is not multiplied over such long distances as odor is sensed. For example, Averroes (quoting Avicenna) tells us that vultures can smell cadavers from 500 miles away.⁶⁷ The species of odor is actually what is sensed over long distances. However, fume, sometimes aided or hindered by the wind, can cross a long distance. Then, through multiplication of the species of fume, odors can be sensed over long distances.

Although odoriferous bodies would still release the species of odor without fume, fume increases the distance over which odor can be perceived. This explanation also solves the problem of sudden or successive multiplication of species. The species on their own are multiplied suddenly, but since odorous fume, a material substance, spreads successively from one place to the next, then the species of odor appear to multiply successively as well. In sum, since odor is a quality, it remains in its subject, which is either an odoriferous body, such as an apple, or fume. What the olfactory sense perceives is not the odoriferous body or the fume but the species of odor.⁶⁸

As we have seen, the nature of perceived odor was one of the biggest problems in reconciling Galenic-Arabic and Aristotelian accounts of smell. Buridan's solution is similar to others put forward since the thirteenth century in that it allows room for the action of both material fume and spiritual species. His account is different from earlier ones in that, first, he has no interest in the physical powers of odors even though Aristotle mentions the ability of odors to balance the nature of the brain and, second, he focuses on the mechanics of the multiplication of species. The question of the olfactory sense itself is something that Buridan does not deal with in this work. He never mentions the nose, the nostrils, or the olfactory breasts. Instead, when

he mentions the olfactory organ, it is always *organum olfactus*.⁶⁹ As I argued above concerning Thomas Aquinas's terminology for the sense organ, the use of this term rather than *nasus* or *nares* for the olfactory organ likely means that the author was aware of the standard terminology for the olfactory organs but chose not to discuss it. In Buridan's case, Aristotle's identification of the organ of smell was unclear and not one of Aristotle's main concerns. Averroes, who is the only other author Buridan cites, named the nose as the sense organ, but medieval scholars such as Pietro d'Abano regarded his opinions on olfaction with disdain. Although Buridan chose not to use the term, the olfactory breasts' identification as the organ of smell was not in question among fourteenth-century scholars.⁷⁰

On the other hand, Pierre d'Ailly's *Tractatus de anima* (1377–81), which is an independent work on the soul rather than a commentary on Aristotle, demonstrates a more typical, if brief, account of the olfactory organs. He asserts that *organum olfactus*, the organ of smell, is found in two nipple-like pieces of flesh descending from the brain that channel the olfactory spirit. The medium is air or water, the same mediums used by vision and hearing but not through the same quality (e.g., transparency for sight). The sense object is odor, which exists in fumous evaporation resolved from an odoriferous object by heat. The species of odor multiply from fumous evaporation.⁷¹ This summary of olfaction contains no surprises. The organs are the usual Arabic ones. The description of odor, a fumous evaporation mediated in air or water, is more (but not entirely) Aristotelian.

Pierre reflects Buridan's interest in species when he notes the special conditions of the species of odor, which multiplies over indeterminately long distances both materially and spiritually or intentionally. Unlike Buridan, however, Pierre explains the difference with reference to the abilities of odoriferous objects:

There are certain odoriferous bodies from which a type of exhalation or fumous evaporation arises in which the fume is a real odor, and we say that this odor is multiplied materially. But there may be some bodies that are very odoriferous, both for a long time and over a long distance, that are not very able to produce fume and that are not able to transmit their fume so quickly over the distance that odor can be sensed. Therefore it is apparently true, just as the Commentator says, that the species of odor is multiplied outside such fume in the air, without fume, and we say that this odor is multiplied spiritually. Such a species is called not real but spiritual, not because it is not a true thing, but because it is imperceptible.⁷²

Odor can be multiplied both materially, or “really,” through fume, and spiritually, through species alone, depending on the abilities of the odoriferous object. Again, the problem of whether odor is real or spiritual was old. These later fourteenth-century authors give essentially the same explanation as scholars such as Albertus Magnus, who found that sometimes odor is a fume

(or vapor) and sometimes it is an immaterial spiritual substance, but they couch it in the language of species or intentions.

The *Margarita philosophica* of Gregor Reisch, composed in 1489–96 and first printed in 1503, is a textbook formatted as a dialogue between a master and pupil that its Carthusian author designed to provide a brief overview of university philosophy. The book was used, recommended, and assigned in German, French, English, and Spanish universities throughout the sixteenth century, both before and after the Reformation.⁷³ Thus, Reisch's discussion of the sense of smell influenced roughly a century's worth of university students, including such influential medical authors as Andreas Vesalius.⁷⁴ Reisch condenses into two chapters many of the questions on olfaction that earlier authors treated at length. He provides a quick overview of the nature of odor, the sense organ, and the weakness of the human senses in one chapter, and in the other he goes into slightly more detail on the medium and operation of smell, including whether odor is in the medium as a real substance or a spiritual quality. In the first chapter, Reisch gives an account that is as Aristotelian as it is possible to be, while the second relies more on Arabic explanations of smell.

The first discussion of smell begins with a concise summary of the sense and its object. Smell is the sense that perceives odors drawn in through the nostrils. The medium of odor is air or water. Odor itself is the earthy dryness within moist objects that is acted on by heat to produce odor. Thus, odors are essentially hot and dry. Differences in proportions of heat and dryness create different odors, which include the aromatic, those related to flavors, the odorless, and the fetid.⁷⁵ Thus far, Reisch is Aristotelian. His explanation of the sense organ, still in the initial overview of smell, includes the Galenic-Arabic account of the sense organ, but he again includes as much of Aristotle as possible. The organs are two pieces of hollow, spongy flesh similar to breasts located in the brain with Aristotle's protective eyelid-like coverings. Reisch adds that the olfactory organ is hot, which suggests either that he has misunderstood Aristotle's assertion that the organ of smell is *potentially* hot and dry or that he takes the warmer sense organs of animals as the standard paradigm of olfaction rather than the cold human organs. Finally, Reisch explains that humans have a large, cold brain and therefore cannot perceive odors well and rarely dream of smells.⁷⁶ Given the eyelid-like coverings and the assertion that humans rarely dream of smells, Reisch's account demonstrates his familiarity with Albertus Magnus's *De homine*.

In the detailed explanation of olfaction in the second chapter, Reisch relies on Arabic explanations of odor. His imaginary pupil asks about the medium of odor, and the master explains that it is just like the medium of sound. He goes on to explain the process of olfaction. First, an odor is resolved from an odoriferous body by heat and becomes mixed with the medium, air. The nostrils breathe in the odoriferous air. Air causes the coverings of the olfactory sense to be opened so that odor can reach the olfactory organs (*carunculas*). The organs touch the nerves of the common sense, through

which the olfactory spirit travels. It meets the species of odor and carries the information back to the soul.⁷⁷

Reisch turns next to disagreements among philosophers over the nature of odor. Some think that a real material body reaches the olfactory organs, because species become weak when they are multiplied, so vultures would not have been able to perceive the odors of corpses at Troy over 500 miles away, as they are reported to have done, through species alone.⁷⁸ Likewise, some Indians are thought to live on the odor of apples. However, species alone are able neither to balance the brain with their heat nor to nourish the body. Reisch concludes that odor exists first in a material fumous evaporation, but the organ senses only the species.⁷⁹ Despite a few colorful examples, Reisch's overview of the philosophical disagreements on odor is descended from Avicenna's review of the same in *De anima*, and it may have been drawn from that text or one of the many texts that cited it. Indeed, Reisch's explanation of the moderate position on the nature of odors reflects the opinion of most thirteenth- and fourteenth-century scholars.

While Reisch falls on the more Aristotelian side of the account of olfaction, his explanation differs little from the Aristotelian-Arabic fusion that his predecessors developed. At the same time as Reisch's work was published, medical compendia continued the standard account of olfaction in a slightly more Arabic vein. Gabriele Zerbi, in his *Liber anathomie corporis humani* (1502), includes a chapter devoted to the anatomy of the olfactory organs. He notes some of the variety of names given to the organs, citing Avicenna and Haly Abbas by name as well as including Albertus Magnus's *papillas mammillaria*. Throughout his detailed discussion of the organs and odor, he cites authorities including Aristotle, Galen, Avicenna, Haly Abbas, Averroes, and Albertus Magnus. Zerbi reiterates the usual anatomy of the area surrounding the organs, the fact that the nostrils cannot be the sense organ (against Averroes), the vaporious or fumous nature of odor (without distinction between them), and the role that odor plays in balancing the cold brain.⁸⁰

After roughly five hundred years of acceptance of the Arabic account of smell, Andreas Vesalius's *De humani corporis fabrica* (1543) finally challenges the olfactory breasts as the organs of smell. He notes that some scholars

say that the olfactory organs are the apexes of certain coils and convolutions of the brain, along with certain swellings of the brain that jut out toward the area of the frontal bone roughly between the eyebrows; because these swellings are prominent and red in color like flesh, they call them the mastoid processes of the brain [*mamillares cerebri processus*], counting one on each side (as indeed there are).⁸¹

He concludes, however, that the olfactory breasts, *mamillares et papillares*, are not the olfactory organs.⁸² Vesalius argues that the traditional understanding of the sense organ confused the olfactory organs with other parts of the brain that touched the forehead. In spite of Vesalius, medieval discussions of the

location of the olfactory breasts above the ethmoid bone and as pieces of the flesh descending from the brain seem to align with the olfactory bulbs that Vesalius and modern science identify as the olfactory organs. Nevertheless, with this dismissal of the long-held position of the seat of smelling, Vesalius marks, not the end, but the beginning of the end of the learned use of the term “olfactory breasts” for the organs of smell.

Vesalius’s argument was not immediately embraced. The 1595 edition of Avicenna’s *Canon* includes annotations written by Giovanni Costeo, a professor of medicine at Bologna, and Giovanni Mongio, a physician who practiced in Venice and Padua. Costeo and Mongio’s edition first appeared in 1564 and was reprinted with revisions in 1595 and 1608.⁸³ The annotations in the 1595 edition review the ancient and Arabic discussions of the sense organ and the nature of odor. First, they present Avicenna’s argument, backed by Galen, that the organs of smell are nipple-like pieces of flesh in the brain. They note that Averroes disagrees. However, their opinion is that “the mammillary processes seem to be the primary instrument [of smell]”⁸⁴ Next, Costeo and Mongio summarize ancient theory on the nature of odor, including information from sources that had not been available during the Middle Ages, such as Plato and Plotinus, as well as from Aristotle.⁸⁵ Despite some new sources, their discussion is largely drawn from Avicenna’s *De anima*. Their conclusion is that the nature of odor is vapor (never fume), which might carry matter that could be breathed into the body, but the sense organ only perceives the species of odor.⁸⁶ Thus, Costeo and Mongio’s opinion aligns closely with the standard medieval account.

Ijsbrand van Diemerbroeck, a Dutch physician and medical professor at Utrecht, discusses smell similarly in his *Anatome corporis humani* (1672). He agrees with the opinions of contemporary anatomists, including Vesalius, that the “papillary processes” are not the organs of smell. However, immediately after, he goes on to argue that the sense organs are nipple-like pieces of flesh, *carnem papillosam*, under the inner tunic of the nostrils.⁸⁷ Like his description of the sense organs, Van Diemerbroeck’s explanation of the nature of odor modifies the medieval account somewhat. He argues that odor is hot and moist rather than hot and dry, and he seems to deny that odor can exist outside of its vaporous subject in species. The sense perceives odor directly from vapor.⁸⁸ Despite some variation, Van Diemerbroeck’s text indicates that many elements of the medieval understanding of the sense of smell remained in the scholarly imagination well into the seventeenth century.

Olfactory anatomy and physiology outside universities

The scholarly explanation of the organs and operation of the sense of smell did not remain locked behind university walls. A relatively small number of practicing doctors had a university education, especially away from the major medical schools. Therefore, beginning in the thirteenth century, some

university-educated physicians put their knowledge into medical manuals designed to be short reference works for practicing doctors. Known owners of medical manuals include, for example, clergymen and surgeons without university medical training.⁸⁹ Three important medical manuals—Gilbert the Englishman's *Compendium medicinae* (1250s), the *Lilium medicinae* (1305) of Bernard de Gordon (c. 1258–1308), and *Rosa anglica* (1305–07) by John of Gaddesden (c. 1280–1361)—all give descriptions of the olfactory organ and odor whose language derives from Avicenna's *De anima*. The descriptions of the sense of smell in these texts are, for the most part, brief and functional. For example, Bernard's and John's texts merely note that the sense organs are two pieces of flesh in the brain similar to the heads of breasts and that odor is carried in vapor (Bernard) or fume (John). Gilbert, however, provides long quotations from Avicenna and Isaac Israeli on the sense organs and the nature and types of odors.⁹⁰

Some scholastic texts, such as Bartholomew the Englishman's *De proprietatibus rerum*, occasionally received vernacular translations in the late Middle Ages. By the fourteenth and fifteenth centuries, many medical manuals likewise received vernacular translations. Medical books were translated into German as early as the thirteenth century because few physicians in German-speaking areas were trained at universities before the fifteenth. Likewise, many English and Anglo-Norman translations of medical works were made in the late Middle Ages because England had no major medical school.⁹¹ Tony Hunt's *Anglo-Norman Medicine* comprises two volumes of medical and surgical works written in Anglo-Norman between the thirteenth and fifteenth centuries, including Roger Frugard's *Chirurgia*, Platearius's *Practica brevis*, the *Trotula*, and the *Euperiston*. Hunt notes that many of the manuscripts he examined for his collection include medical texts in Middle English as well.⁹²

Surgeons also brought scholastic discussions of smell outside of a university and Latin-literate context. Beginning in the thirteenth and continuing up to the early fourteenth century, the genre of surgical manuals took advantage of translations of Greek and Arabic works as well as discussions within universities to expand the surgical understanding of smells. Surgery initially developed outside of universities and continued to exist separately in many places. There was a tradition of scholastic surgery that began in medical schools in northern Italy and spread to France and Spain in the thirteenth and fourteenth centuries. However, surgeons without a university education continued to practice even in these regions, despite opposition by educated surgeons.⁹³ The surgical manual genre began in the late twelfth century with Roger Frugard, who imitated the style of scholastic medical texts. In the next two centuries, surgeons increasingly tapped into the medical tradition of universities. At the same time, Michael McVaugh argues, they began to assign greater significance to the odors of the body.⁹⁴ While surgical manuals did not ask questions about the sense of smell, works by surgical authors including Lanfranc of Milan (c. 1250–1306), Henri de Mondeville (c. 1260–1316), and

Guy de Chauliac (c. 1300–68) did communicate accepted scholastic positions on the anatomy and physiology of olfaction.

Lanfranc of Milan explains in his *Chirurgia magna* (1296) that air goes in through the nostrils and the ethmoid bone during the sensing of odors and that superfluities come down from the brain through the same passages. However, he designates the nose as the proper instrument of smell.⁹⁵ On the other hand, both Henri de Mondeville in his *Chirurgia* (1316) and Guy de Chauliac in his *Inventarium* or *Chirurgia magna* (1363) include the olfactory breasts in their overviews of smell. Henri follows a version of the standard account of olfaction, with a Galenic-Arabic description of olfactory anatomy and an assertion that the organ senses the species of odor.⁹⁶ Guy's overview gives a similar anatomy but describes odor as a fumous evaporation instead of an immaterial quality.⁹⁷ The terminology of the organs in both Guy's and Henri's texts betrays the influence of Avicenna's *Canon* or a medieval source citing that text. Henri's species and Guy's fumous evaporation both ultimately derive, as we have seen, from Aristotle, but from different parts of his explanations of smell. Henri was perhaps reading a medieval explanation of smell, while Guy's source may have been an Arabic text. In this way, Latin surgical manuals continued the fusion of Aristotelian and Galenic-Arabic elements in explanations of smell that scholastic sources developed.

In addition to copying and, later, printing in Latin, these manuals were frequently translated into vernacular languages. Claude De Tovar asserts that surgical manuals "were often more quickly and more completely translated than medical works."⁹⁸ For example, the originator of the genre, Roger Frugard's *Chirurgia*, was translated into Occitan (partially) and Anglo-Norman (fully) in the early and mid-thirteenth century and into Old French and Middle English in the fourteenth and fifteenth.⁹⁹ Likewise, Peter Murray Jones argues that these texts, both in Latin and in vernacular translations, brought scholastic surgery to practitioners who did not have university training.¹⁰⁰ Therefore, surgical manuals are likely an important genre in the introduction of elements of the scholastic discussions of smell to non-Latinate readers.

Many more translations of surgical manuals were made in the fourteenth and fifteenth centuries, including both Lanfranc's *Chirurgia magna* and his *Chirurgia parva* (1291), which were translated into French, German, English, and Spanish.¹⁰¹ Likewise, Henri's unfinished *Chirurgia* received a French translation in 1314, even before his death in 1316 ended his revision of the text.¹⁰² The language of the French translation echoes the Latin closely, both on the olfactory organs and on the nature of odor.¹⁰³ Finally, Guy de Chauliac's work was not only the last major surgical manual of the Middle Ages but also one of the most popular. According to McVaugh's critical edition, the work was "repeatedly copied in the later fourteenth and fifteenth centuries, and was even occasionally quoted as a kind of public standard." The Latin version also went through several print editions at least up to the mid-sixteenth century. By the end of the fifteenth century, translations of the *Inventarium* existed in English, French, Italian, Hebrew, Dutch, and Provençal.¹⁰⁴ It continued to be printed

in English, French, Italian, Spanish, Dutch, and Latin after 1500.¹⁰⁵ The first English translation (of at least four Middle English versions) was made soon after Guy's death in 1368.¹⁰⁶ The Middle English edition, as McVaugh notes, mirrors the Latin, with the olfactory organs translated as "teetly addicions of þe brayne" and the nature of odor as "smekely euaporacioun."¹⁰⁷

Through these works and similar translations, a concise, basic anatomy of the sense of smell and the nature of odor became available to a broader reading public that was primarily or only literate in a vernacular language. In English, at least, the olfactory breasts became enough a part of vernacular culture that, as Palmer notes, they were referred to in Thomas Tomkis's *Lingua*, an early seventeenth-century play about the senses.¹⁰⁸ Thus, the olfactory breasts were part of both popular and medical literature for more than a century after Vesalius questioned the scholarly understanding of olfactory anatomy.

Conclusion

Central medieval scholars obtained their first philosophical and medical discussions of the olfactory sense from Arabic sources: the organs of the sense of smell were two breast- or nipple-like pieces of the brain that reached down to the top of the nostrils and accepted odoriferous vapor or fume. As more sources were translated in the twelfth and thirteenth centuries, scholarly views of the sense of smell were altered somewhat by Aristotle's different explanation of olfaction. Medieval authorities did not accept the nose as the organ of smell, despite Averroes's arguments that it must be, but they did adopt Aristotle's idea that the odor interpreted by the olfactory breasts was an immaterial species of odor rather than physical matter. For the most part, they also embraced Aristotle's short definition of the nature of odor as a fumous evaporation. However, scholars did not give up the Galenic concept that odor nourished the animal spirit with its physical matter. Instead of following either the Galenic-Arabic account or Aristotle's, medieval philosophers and doctors reconciled and melded the two traditions to come up with a synthesis of the two accounts that began with the synthesis of Avicenna but went beyond it.¹⁰⁹ There was a tendency in the fourteenth through the early sixteenth century, particularly among university scholars, to emphasize the mediation of odor in species and to explore the multiplication of species where earlier scholars had focused on the powers of odors to physically strengthen the brain. However, this different approach to olfactory theory did not significantly alter the understanding of smelling. The synthesis developed in the thirteenth century remained the basis of the standard account of olfaction with few modifications until at least the seventeenth century, even as dissection became a more common practice and more translations of Galenic works became available. Scholastic and medical discussion of the sense of smell did not end with the organ and nature of odor, however. Philosophers and doctors imputed a range of powers to odor that gave practical meaning to the anatomy and physiology of olfaction.

Notes

- 1 Ælred of Rievaulx, *Dialogue on the Soul*, trans. C.H. Talbot (Kalamazoo: Cistercian Publications, 1981), 45–47; Ælred of Rievaulx, *De anima*, I.19, secs. 25–26 in *Opera Omnia*, CCCM 1, ed. A. Hoste and C.H. Talbot (Turnhout, Belgium: Brepols, 1971), 691–92.
- 2 Charles Burnett, Introduction to *Adelard of Bath, Conversations with his Nephew*, trans. and ed. Charles Burnett et al. (Cambridge: Cambridge University Press, 1998), xxxi.
- 3 *Ibid.*, xi–xii.
- 4 *Ibid.*, xxxi–xxxii.
- 5 *Ibid.*, xxvii–xxviii; Margaret Gibson, “Adelard of Bath,” in *Adelard of Bath: An English Scientist and Arabist of the Early Twelfth Century*, ed. Charles Burnett (London: Warburg Institute, 1987), 11.
- 6 Burnett, Introduction to *Adelard of Bath*, xxviii–xxix.
- 7 *Ibid.*, xxix.
- 8 Adelard of Bath, *Questiones naturales*, in *Adelard of Bath, Conversations with his Nephew*, trans. and ed. Charles Burnett et al. (Cambridge: Cambridge University Press, 1998), 154–55.
- 9 *Ad odorem enim efficiendum aer odore affectus quibusdam mammulis a cerebro suspendulis, que huius sensus instrumenta sunt, coniungitur*. *Ibid.*, 154–55.
- 10 *Ibid.*, 126–29.
- 11 Bernard McGinn, Introduction to *Three Treatises on Man: A Cistercian Anthropology*, ed. Bernard McGinn (Kalamazoo: Cistercian Publications, 1977), 27–35.
- 12 William of St.-Thierry, *The Nature of the Body and Soul*, in *Three Treatises on Man: A Cistercian Anthropology*, ed. Bernard McGinn, trans. Benjamin Clark (Kalamazoo: Cistercian Publications, 1977), 120–21. I have modified the translation to read “fume” where Clark’s text has “vapor” so that the translation is in line with the Latin of PL 180: *Quem [fumus] cerebri ventriculis attractum in suam mutant naturam* (William of St.-Thierry, *De natura corporis et animae*, bk. 1, PL 180, col. 706B).
- 13 William of St.-Thierry, *The Nature of the Body and Soul*, trans. Clark, 120–21; *superflua fumositas* (William of St.-Thierry, *De natura corporis et animae*, bk 1, col. 706B).
- 14 William of Conches, *William of Conches: A Dialogue on Natural Philosophy (Dragmaticon Philosophiae)*, trans. Italo Ronca and Matthew Curr (Notre Dame: University of Notre Dame Press, 1997), 165; *carunculae quaedam, quae a cerebro prodeunt, in modum mamillarum dependent* (William of Conches, *Dragmaticon Philosophiae*, ed. Italo Ronca (Turnhout, Belgium: Brepols, 1997), 6.22, 256).
- 15 William of Conches, *William of Conches*, trans. Ronca and Curr, 165; William of Conches, *Dragmaticon Philosophiae*, 6.22, 256–57.
- 16 John Marenbon, *Medieval Philosophy: An Historical and Philosophical Introduction* (New York: Routledge, 2007), 170–71.
- 17 *Olfactus fit per virtutem quae est in duabus carunculis cerebri quae sunt similes sumitatibus uberum*. Eva St. Clair, “Algazel on the Soul: A Critical Edition,” *Traditio* 60 (2005): 63. St. Clair footnotes the comparison of the olfactory breasts to goat teats, but since Albertus Magnus includes it as part of the text, medieval editions probably frequently included that comparison.

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- 18 Haly Abbas, *Liber regalis*, III.15, 36r.
- 19 Constantine the African, *Pantegni*, III.13, 17.
- 20 Another possibility is that William gathered some information from conversation with other scholars.
- 21 *[O]rgana olfactus sunt immediate in cerebro secundum auctoritates, scilicet Avicennae, Constantini et Gregorii, et etiam Aristoteles vult in libro de Sensu et sensato*. Albertus Magnus, *De homine*, q. 28, art. 1, 35:255.
- 22 Aristotle, *De sensu*, ch. 5, 444a8–16.
- 23 *[Q]uia similia sunt conis mamillarum*. Albertus Magnus, *De homine*, q. 28, art. 1, 35:256.
- 24 *Odor secundum suum esse materiale et naturale quod habet in vaporativo sicco, sanus est cerebro: et ideo oportuit, quod in sua materia pertingeret ad ipsum, et non tantum per speciem sensibilem separatum a materia, sicut accidit in aliis sensibilibus. Si autem esset vis ordinata in nervo concavo deferente spiritum ad odoratum, ille spiritus non reciperet impressionem nisi tantum speciei sine materia: sed cum species separata a materia non sit calida neque frigida, non conferret adiuvamentum cerebri*. Ibid.
- 25 *[O]dores ... vaporiferos*. Ibid.
- 26 This explanation of the sensation of odor by the brain itself shows Albertus's reading of Nemesius of Emesa as well as his interest in incorporating Aristotle into the account of olfaction.
- 27 Albertus Magnus, *De homine*, q. 29, art. 1, 35:260–61.
- 28 It is impossible to understand Aristotle's theory of smell in *De sensu* without going to *Meteorologica* for clarification of the nature of fume. Throughout his works, Aristotle used "fume" and "vapor" with specific qualities and definitions of each in mind. While they are related terms, they are inherently different. In *Meteorologica*, Aristotle makes both a distinction and a relation between vapor and fume several times as he details the nature and origin of such natural phenomena as what we call the air (what we breathe but not elemental air), clouds, winds, rain, and shooting stars. Vapor and fume both arise from the earth when it is heated by the sun. The exhalation that comes from moisture on the earth is vapor, while the exhalation that comes from the dryness of the earth itself is fume (Aristotle, *Meteorologica*, I.4, 341b2). Each contributes one of its qualities to the non-elemental air. Even though vapor comes out of the hot and dry earth, its qualities are cold and humid. Fume, which arises as a part of the earth, is hot and dry. Air, made up of both of these, is hot and humid. Each constituent part produces different meteorological phenomena. For example, vapor produces rain while fume produces wind (II.4, 359b30–360a1, 360a3–5). Vapor and fume are, then, meaningful terms to Aristotle. While he argues in *De sensu* that, technically speaking, neither fume nor vapor should carry odor, he uses fume as a short, practical definition of the nature of odor because the two natural phenomena are similar. Medieval European usage of the terms *vapor* and *fumus* failed to recognize the difference between the words that was a vital part of their meanings Aristotle's system. Most authors defined odor as a fine vapor or fume without much sense of differentiation between them. Mistakes in the Latin version of the text may have contributed to the conflation of vapor and fume by Albertus Magnus, and many other medieval authors. Aristotle's linking of vapor and fume in *Meteorologica* likely also contributed to the conflation of the words.

- 29 [T]errestre siccum quod permixtum est vaporibus odorum: fumus enim est vapor terrae, ut dicit Aristoteles in libro Meteororum. Albertus Magnus, *De homine*, q. 29, art. 3, 35:263.
- 30 [E]xhalatio vero [est] inquantum ab exteriori calido agente educitur calidum naturale, et cum illo humidum siccabile. Ibid.
- 31 Aristotle, *De sensu*, ch. 5, 443a7–8.
- 32 While Albertus acknowledges that the moist in *enchimum* refers to the moisture of food, his student Thomas Aquinas merely interprets the Greek word as referring to moisture within something dry. Albertus: “We call ‘enchymous’ intrinsic or related to the complexion in Latin. ‘Chimus’ is the juiciness of food or nourishment, and therefore enchymous nutriment is called humid nourishment”; *Enchimum autem vocamus in Latino intrinsecum sive complexionatis. Chimus enim succositas cibi est sive alimenti: et ideo enchimum nutrimentum humidum alimenti vocatur* (Albertus Magnus, *De sensu et sensato*, tract 2, ch. 9, in *Opera Omnia*, Vol. 9, ed. Borgnet (Paris: Vives, 1890), 62). Thomas: “But what is active in the generation of odor is *enchymous moistness*. It is called ‘enchymous’ from ‘en,’ which means ‘in,’ and ‘chymous,’ which means ‘moisture’: for the moisture exists as, so to speak, drunk in by and incorporated into something dry.” Thomas Aquinas, “Commentary on *On Sense and What is Sensed*,” ch. 11, trans. Kevin White, in *Commentaries on Aristotle’s On Sense and What is Sensed and On Memory and Recollection*, trans. Kevin White and Edward M. Macierowski (Washington, D.C.: The Catholic University of America Press, 2005), 97; *In generatione autem odoris est actiuum humidum enchimum (et dicitur enchimum ab en, quod est in, et chimus, quod est humor, quasi humore existente inibito et incorporato alicui siccio)* (Thomas Aquinas, *Sentencia libri de sensu et sensato*, ch. 11, in *Opera Omnia*, Vol. 45.2, ed. R.-A. Gauthier (Rome: Commissio Leonina, 1985), 64).
- 33 Albertus is especially interested in the dual material and spiritual natures of odor and digresses on medieval theory in both his *De anima* and *De sensu* commentaries, especially in the former, where he attributes the statement “odor is a fumous evaporation” to Plato and brings in Avicenna’s opinions on the nature of odor from his *De anima*. Albertus Magnus, *De sensu*, II.10, 64–65; Albertus Magnus, *De anima*, II.3.25, in *Opera Omnia*, Vol. 5, ed. Borgnet (Paris: Vives, 1890), 276–78.
- 34 Albertus Magnus, *De homine*, q. 28, art. 2, 35:258.
- 35 Ibid., q. 28, art. 1, 35:256.
- 36 [D]uo coni cerebri in anteriori parte capitis ad modum coni mammillae. Albertus Magnus, *Super III sententiam*, III.13.4, in *Opera Omnia*, Vol. 28, ed. Borgnet (Paris: Vives, 1894), 240.
- 37 [D]uas papulas, quae sunt similes papulis mamillarum. Albertus Magnus, *De animalibus*, I.2.8, in *Opera Omnia*, Vol. 11, ed. Borgnet (Paris: Vives, 1891), 55.
- 38 [Cerebrum] descendit in duas papillas, dicebat Albertus (Gabriele Zerbi, *Liber anathomie corporis humani* (Venice, 1502), bk.1, 123r); Nam et Albertus cerebri anterioris extremum esse duabus mamillarum papillis consimile, prodidit, in quibus sit odorandi potestas (Ludovico Ricchieri, *Lectionum antiquarum libri trigenta* (Basel: Ambrosius and Aurelius Froben, 1566), bk. 24, ch. 19, 937); Modo autem sat fuisse videtur, processus illos cerebri commemorasse, quos aliqui etiam mamillares et papillares nuncupasse colliguntur (Andreas Vesalius, *De humani corporis fabrica* (Basel: 1543), bk. 4, ch. 3, 323).
- 39 María José Ortúzar Escudero argues that the placement of information about the sensibles in Vincent of Beauvais’s and Bartholomew the Englishman’s

- encyclopedias was influenced by the authors' readings of Aristotle. María José Ortúzar Escudero, "The Place of Sense Perception in Thirteenth-Century Encyclopedias: Two Different Readings of Aristotle," *Revista Española de Filosofía Medieval* 25 (2018): 99–123.
- 40 Vincent of Beauvais, *Speculum naturale*, IV.99, in *Speculum Maior*, Vol. 1 (Venice: Dominic Nicolinum, 1591), 50v.
 - 41 Ibid., IV.100, 1:51r.
 - 42 Vincent of Beauvais, *Speculum naturale*, XXV.61–69, 1:209v–210v.
 - 43 *Est ergo odoratus vis sensitiva vaporum susceptiva*. Ibid., XXV.64, 1:210r.
 - 44 Bartholomew the Englishman, *De proprietatibus rerum*, III.19, 68.
 - 45 Ibid., 68–69.
 - 46 Ibid., XIX.37, 1162–65.
 - 47 E.g., Ibid., XIX.37, 1162.
 - 48 Peter of Spain, *Questiones super libro "De Animalibus" Aristotelis: Critical Edition with Introduction*, ed. Francisca Navarro Sanchez (Burlington: Ashgate, 2015), XIV.1.4, 334.
 - 49 *[D]upliciter est loqui de odore. Uno modo a parte sue nature formalis: et sic est qualitas: quia sic immutat sensum. Alio modo a parte substantie deferentis odorem: et sic odor dicitur fumus substantie illam qualitatem deferens*. Peter of Spain, commentary on *De dietarum universalium*, lectio 19, in *Opera Omnia Ysaac*, 47r. Lyons: Trot, 1515.
 - 50 Ibid., 47r.
 - 51 Peter of Spain, commentary on *De dietarum universalium*, lectio 20, 50v.
 - 52 *[Q]uia maxime necessarium est animali ut per odorem confortetur cerebrum*. Roger Bacon, *Roger Bacon and the Origins of Perspectiva in the Middle Ages*, trans. and ed. David C. Lindberg (Oxford: Clarendon Press, 1996), I.5.3, 66–67.
 - 53 Ibid., dist. 8, ch. 3, 114–15. Bacon also mentions the olfactory breasts and odor in I.2.1, 22–23 and I.9.4, 142–43.
 - 54 See, for example, Thomas Aquinas, "Commentary on *On Sense and What is Sensed*," trans. Kevin White, ch. 4, 438b21–438b27, 49–50.
 - 55 Averroes, *Colliget*, II.17, 26r–v. Although Pietro argues against Averroes's view, I am not aware of any medieval author who embraced Averroes's unique arguments concerning smell, although his repetitions of Avicenna's arguments were sometimes cited under Averroes's name.
 - 56 Pietro d'Abano, *Conciliator*, differentia 45, 67v.
 - 57 *[V]el ... noluit nares organum olfactus principale, et susceptivum, sed deferens, et secundarium*. Ibid., 68r.
 - 58 *[N]atura, sive forma sicci euchimi*. Ibid., differentia 155, 211v.
 - 59 *Nosce siquidem antiquiores communiter dixisse, quod odor sit fumalis evaporatio. Quod mirandum eo, quod adhuc id plurimi Aristoteles attribuunt modernorum: cum tamen idem impugnet inquiring, quod odorare fit animalibus in aqua, ut piscibus, et in aere, ut aliis. Fumalis vero evaporatio est passio terrae, et aeris, et non aquae. Non igitur secundum hoc odorarent aquatica: cum huiusmodi fumalis evaporatio non possit esse in ipsa, cuius passio est vapor, neque etiam potest dici, quod sit effluxus quaedam odor: quia tunc non conveniret aeri, sed aquae soli. Sed dico, quod si reperiatur quid commune aquae, et aeri, quod tunc erit secundum hanc impugnationem Aristoteles descriptio conveniens odoris*. Ibid.
 - 60 *Colliget tamen 3 ponitur et satis improprie, quod esse vaporum sit communis passio omnium quatuor elementorum Sequaces autem Averroes aliter praedicta impugnant odoris descriptionem*. Ibid.

- 61 Ibid.
- 62 Pietro does not explain that only few and similar odors can be sensed at the same time, but it was common scholarly knowledge that good odors supersede bad odors. For example, one of the *Prose Salernitan Questions*, which were composed c. 1200, explains that the soul prefers to sense aromatic odors over fetid odors, and therefore it perceives good smells rather than bad ones when it has the choice. Lawn, *PSQ*, Ba107, 190–91.
- 63 Unlike thirteenth-century authors, Pietro identifies a path of digestion for odor that begins with a material vapor and refines it until it is nothing but species, which is what reaches the senses. The matter goes to nourish the spirits. This power of odor is discussed in Chapter 3.
- 64 Benoît Patar, ed., *Le Traité de l'âme de Jean Buridan*, Philosophes Médiévaux 29 (Longueuil, Québec: Éditions du Préambule, 1991), 58*–60*.
- 65 Jean Buridan, *Le Traité de l'âme de Jean Buridan*, expositio II 4.4, 95–99.
- 66 Ibid., 98.
- 67 Buridan, *Le Traité de l'âme*, quaestiones II.20, 390–91. Since he cites tiger birds in the same passage, it seems likely that Averroes found the example in Avicenna's *De anima*. See Averroes, commentary on *De Anima*, II.97, in *Libri Omnes*, Vol. 6 (Venice: Juntas, 1550), 146r. See also Chapter 1.
- 68 Buridan, *Le Traité de l'âme*, quaestiones II.20, 390–92.
- 69 In the 1516 Lokert edition, which is included in Patar's edition, Buridan mentions fume going into the nose but still writes as if the proper olfactory organ were something else. Buridan, *Le Traité de l'âme*, 623.
- 70 The commentary and questions of Buridan's student Nicolas Oresme (c. 1322–82) are similar to Buridan's text. Oresme also does not name the olfactory organ. See Nicolas Oresme, *Nicolai Oresme Exposito et Quaestiones in Aristotelis De anima*, Philosophes Médiévaux 32, ed. Benoît Patar (Paris: Éditions Peeters, 1995), expositio II.4.4, 50–55; quaestiones II.20, 290–96.
- 71 Pierre d'Ailly, *Tractatus de anima*, 3.7, in *Die Philosophische Psychologie des Peter von Ailly*, ed. Olaf Pluta (Amsterdam: B.R. Gruner, 1987), 20.
- 72 *Sunt enim quaedam corpora odorifera, a quibus fit quaedam exhalatio sive fumalis evaporatio, in quo fumo est realis odor, et hoc vocamus odorem multiplicari realiter. Sed cum aliqua sint corpora valde odorifera et longo tempore et ad longam distantiam, quae non sunt multum fumabilia et quae non possent suum fumum ita cito per illam distantiam transfundere, sicut odor sentitur, ideo versimile est, sicut dicit Commentator, quod ultra talem fumum multiplicetur species odoris in aere sine tali fumo, et hoc vocamus odorem multiplicari spiritualiter. Dicitur enim talis species non realis, sed spiritualis, non quia non sit vera res, sed quia est insensibilis.* Ibid., 8.5, 51.
- 73 Andrew Cunningham and Sachiko Kusukawa, Introduction to *Natural Philosophy Epitomised: A Translation of Books 8–11 of Gregor Reisch's Philosophical pearl (1503)*, trans. and ed. Andrew Cunningham and Sachiko Kusukawa (Burlington: Ashgate, 2010), ix–xiii, xviii.
- 74 Vesalius scoffed at the anatomy of the *Margarita*. Ibid., xi–xii.
- 75 Gregor Reisch, *Margarita philosophica* (Freiburg-im-Breisgau: Joannes Schottus, 1503), X.2.17. This edition has no folio numbers. Gregor Reisch, *Natural Philosophy Epitomised: A Translation of Books 8–11 of Gregor Reisch's Philosophical pearl (1503)*, translated and ed. Andrew Cunningham and Sachiko Kusukawa (Burlington: Ashgate, 2010), X.2.17, 196–97.

- 76 Reisch, *Margarita philosophica*, X.2.17. My translation, with consultation of the translation by Cunningham and Kusukawa in Reisch, *Natural Philosophy Epitomised*, X.2.17, 196–97.
- 77 Reisch, *Margarita philosophica*, X.2.18; Reisch, *Natural Philosophy Epitomised*, trans. Cunningham and Kusukawa, X.2.18, 198.
- 78 The account of the carrion-eating birds who smell corpses on a battlefield, which originates in Avicenna's *De anima*, varies in medieval accounts. Sometimes the birds are tiger birds, as Avicenna says, but often they are vultures. Other times, they are just birds. The location they fly to might be Greece or just somewhere 500 miles away, or, as Reisch relates the story, Troy.
- 79 Reisch, *Margarita philosophica*, X.2.18; Reisch, *Natural Philosophy Epitomised*, trans. Cunningham and Kusukawa, X.2.18 198.
- 80 Zerbi, *Liber anathomie*, bk.1, 122v–23v.
- 81 Andreas Vesalius, *On the Fabric of the Human Body*, Vol. 3, trans. William Frank Richardson (Novato: Norman Publishing, 2002), IV.3, 179. Richardson likely translates as he does to distinguish the medieval olfactory breasts from the mamillary processes in the vertebrae and the mammillary bodies in the brain, which are both modern terms for human anatomy. *Alii vero quosdam cerebri anfractuum revolutionumque apices, ac ad frontis ossis sedem versus superciliarum medium protuberantia cerebri tubercula, olfactus organa statuunt, et tubercula illa quod promineant, carnisque quasi modo rubeant, mamillares cerebri processus vocant, utrinque unum (uti etiam est) enumerantes*. Vesalius, *De humani corporis fabrica*, IV.3, 322.
- 82 Vesalius, *On the Fabric of the Human Body*, trans. Richardson, IV.3, 3:181; Vesalius, *De humani corporis fabrica*, IV.3, 323.
- 83 Nancy Siraisi, *Avicenna in Renaissance Italy: The Canon and Medical Teaching in Italian Universities after 1500* (Princeton: Princeton University Press, 1987), 140–42.
- 84 *[V]identur tamen processus mamillares primarium eius esse instrumentum*. Giovanni Costeo and Giovanni Mongio, Annotations to Avicenna, *Canon*, III.5.1.1, 578.
- 85 *Ibid.*, 579–80.
- 86 *Ibid.*, 580–81.
- 87 Ijsbrand van Diemerbroeck, *The Anatomy of Human Bodies*, trans. William Salmon (London, 1694; Ann Arbor: Early English Books Online, 2004), III.19, 473–74; Ijsbrand van Diemerbroeck, *Anatome corporis humani* (Lyons: Hugetan, 1679), III.19, 447.
- 88 Van Diemerbroeck, *The Anatomy of Human Bodies*, trans. Salmon, III.19, 472–73.
- 89 Virginia Langum, “‘The Wounded Surgeon’: Devotion, Compassion and Metaphor in Medieval England,” in *Wounds and Wound Repair in Medieval Culture*, ed. Larissa Tracy and Kelly DeVries (Boston: Brill, 2015), 272–73.
- 90 Gilbert, *Compendium*, bk. 3, 149r–150v; Bernard de Gordon, *Lilium medicinae* (Paris: 1542), III.15, 158v–159r; John of Gaddesden, *Rosa anglica practica medicina a capite ad pedes* (Pavia: Girardengis and Birreta, 1492), III.3.1, 150r.
- 91 Siraisi, *Medieval and Early Renaissance Medicine*, 53.
- 92 Tony Hunt, *Anglo-Norman Medicine*, Vol. 2 (Rochester, NY: Boydell and Brewer, 1997), vii. Hunt also refers to Middle English translations alongside Anglo-Norman in his introductions to both volumes.

- 93 Siraisi, *Medieval and Early Renaissance Medicine*, 178; Peter Murray Jones, "John of Arderne and the Mediterranean Tradition of Scholastic Surgery," in García-Ballester, *Practical Medicine*, 289–90.
- 94 Michael McVaugh, "Smells and the Medieval Surgeon," *Micrologus* 10 (2002): 118–21.
- 95 Lanfranc of Milan, *Lanfrank's "Science of Chirurgie,"* III.3.3, ed. Robert V. Fleischhacker, EETS o.s. 102 (London: Trübner, 1894), 258.
- 96 Henri de Mondeville, *Die Chirurgie des Heinrich von Mondeville*, I.3, ed. Julius Leopold Pagel (Berlin: August Hirschwald, 1892), 34.
- 97 *Nares enim sunt duo canales ascendentes usque ad ossa colatorii, ubi applicantur addiciones mamillares cerebri in quibus est odoratus, et descendentes usque ad palatum post uvulam; per quos canales attrahitur fumalis evaporacio ad loca dicta et aer inspiratur et respiratur ad pulmonem tempore suo et cerebri expurgantur superfluitates.* Guy de Chauliac, *Inventarium*, I.2.2, 36.
- 98 "[I]ls ont été souvent plus rapidement et plus complètement traduits que les ouvrages médicaux." Claude De Tovar, "Les versions françaises de la *Chirurgia Parva* de Lanfranc de Milan: Étude de la tradition manuscrite," *Revue d'Histoire des Textes* 12–13 (1982–83): 195.
- 99 Jones, "John of Arderne," 291; Hunt, *Anglo-Norman Medicine*, 1:8–17.
- 100 Jones, "John of Arderne," 291–93.
- 101 De Tovar, "Les versions françaises," 195–203, 253–55; Langum, "The Wounded Surgeon," 273–74.
- 102 Alphonse Bos, Introduction to *La Chirurgie de Maître Henri de Mondeville: Traduction Contemporaine de l'Auteur*, Vol. 1, ed. Alphonse Bos (Paris: Firmin Didot, 1897), ii; Henri de Mondeville, *La Chirurgie de Maître Henri de Mondeville: Traduction Contemporaine de l'Auteur*, ed. Alphonse Bos (Paris: Firmin Didot, 1897), 1:66.
- 103 Henri de Mondeville, *La Chirurgie*, 1:66.
- 104 Michael R. McVaugh, Introduction to Guy de Chauliac, *Inventarium*, 1:xiv.
- 105 Nancy Siraisi, *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice* (Chicago: University of Chicago Press, 1990), 166.
- 106 McVaugh, Introduction to Guy de Chauliac, *Inventarium*, 1:xiv; Langum, "The Wounded Surgeon," 273–74.
- 107 Guy de Chauliac, *The Cyrurgie of Guy de Chauliac*, Vol. 1, ed. Margaret S. Ogden, EETS o.s. 265 (London: Oxford University Press, 1971), 44; McVaugh, Introduction to Guy de Chauliac, *Inventarium*, 1:xv.
- 108 Richard Palmer, "In Bad Odour: Smell and its Significance in Medicine from Antiquity to the Seventeen Century," in *Medicine and the Five Senses*, ed. W. F. Bynum and Roy Porter (Cambridge: Cambridge University Press, 1993), 62. In this play, each of the senses presents his powers and uses in order to win a crown, which Lingua, or Speech, has planted to sow discord because she wants to be a sense too. Olfactus's speech in act 4, scene 4 reflects a scientific understanding of the sense of smell similar to that found in medieval texts:

Just in the midst of Cephalon's round face
 As 'twere a frontis-piece unto the hill,
 Olfactus lodging built in figure long,
 Doubly dis-parted with two precious vaults,
 The roots whereof most richly are inclos'd

With Orient Pearls, and sparkling Diamonds:
Beset at the end with Emeralds and Turchois,
And Rubies red and flaming Chrysolits,
At upper end whereof in costly manner,
I lay my head between two spongeous pillowes,
Like fair Adonis twixt the paps of Venus,
Where I conducting in and out the wind,
Daily examine all the ayr inspir'd.
By my pure searching, if it be pure,
And fit to serve the Lungs with lively breath:
Hence do I likewise minister perfume
Unto the neighbour brain, perfumes of force
To cleanse your head, and make your fantasie
To refine wit, and sharp invention,
And strengthen memory, from whence it came,
That old devotion Incense did ordain
To make mans spirit more apt for things divine;
Besides a thousand more commodities,
In lieu whereof your Lordships I request,
Give me the Crown if I deserve it best.

Thomas Tomkis, *Lingua, or, The Combat of the Tongue, and the Five Senses for Superiority* (London, 1657; Ann Arbor: Early English Books Online, 2009), act 4, scene 4. The play was popular: there were six English editions and two translations (one into Dutch and the other into German) before 1660. Morris P. Tilley, "The Comedy *Lingua* and Sir John Davies's *Nosce Teipsum*," *Modern Language Notes* 44, no. 1 (Jan. 1929): 36.

- 109 My findings on olfaction agree with Heather Webb's argument against the "supposed debate ... between the Aristotelian philosophers and the Galenic physicians" on issues such as whether the seat of the senses was the heart or the brain. She demonstrates that the accounts of Galen and Aristotle were reconciled rather than viewed as competing accounts from the thirteenth through fifteenth century. Heather Webb, "Cardiosensory Impulses in Late Medieval Spirituality," in *Rethinking the Medieval Senses: Heritage, Fascinations, Frames*, ed. Stephen G. Nichols, Andreas Kablitz, and Alison Calhoun (Baltimore: Johns Hopkins University Press, 2008), 268.

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Part 2

The powers of odors



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3 Aromaticity strengthens the spirits

Physical powers of odors in scholastic texts

Medieval philosophers and doctors considered the olfactory sense to have a range of powers related to health. Some of the powers of odors relied on the similarity between odors and flavors, which provided information about the qualities (hot, cold, moist, and dry) of a substance. Reasoning out the qualities of medicines through sight, smell, and taste was a skill that Arabic medical manuals urged on physicians. Medieval medical sources not only continued to teach the judgment of medicines by flavor, odor, and color but also demonstrate application of it. When using this method of judging medicines, smell was the second most reliable sense, after taste, revealing that the placement of smell in the hierarchy of senses depended on the purpose for which the senses were required. Diagnosis of illness worked along the same principles as the judgment of medicines. Physicians and surgeons often assessed the odors of urine, blood, sputum, breath, and other bodily secretions using the same descriptors and indicators of quality as they gave to the odors of medicines.

Most of the powers of odors depended on their fumous or vaporous nature. Odors could both heal and harm by balancing or unbalancing the condition of the body or the brain. These powers correspond to the two basic types of smells, good and bad. Medieval authors attributed the cause of these abilities primarily to the fumous nature of odor. While good odors were generally pleasing to the soul and bad odors were generally displeasing, the body's fume-like spirits were nourished by odors because of the similarity between the natures of odors and spirits. Through nourishment, the spirits became stronger and more able to fight disease. There were even suggestions that humans could survive on the nourishment of odors alone. Thus, odors were beneficial in treating illness even when the odor of the medicine was not the main healing quality.

The fumous or vaporous nature of odor meant that odoriferous medicines could cause or treat many illnesses, particularly headaches and illnesses of the brain. The other organs of the body were also affected by odors through the nourishment and pleasure (or displeasure) an odor gave to the spirits that existed throughout the body. For this reason, doctors from ancient to medieval times famously used good and bad odors to manipulate the position of the uterus within the body. Women's reproductive organs were not the only

ones affected by odor, however. Medieval doctors believed that smelling camphor could suppress male sexual abilities. Setting these two powers of odors together reveals a strong link between the olfactory organs in the brain and the sexual organs of both men and women.

Odors could affect the body in a variety of ways, both positive and negative. Although some of the powers identified here have been widely acknowledged as part of medieval belief, they cannot be fully understood without taking into consideration scholastic theory about the nature of odor and the working of the olfactory sense. The connection between flavors and odors explains some of the uses of smell, in particular in the judgment of medicines and the diagnosis of illnesses. The power of odors to nourish the spirits may also have been augmented because odors were like flavors, which played an important role in nourishment. However, the abilities of odor to affect the body largely depended on the nature of odor as a fume and the similarity between fume and the spirits that move throughout the body. Once these points are considered, the capabilities of odors to affect the body become logical and the uses of odors by medieval physicians become predictable.

The qualities of medicines

The ability to judge the qualities of medicines on the basis of color, odor, and flavor was one of the basic tools of the medieval doctor. In his fourteenth-century surgical manual, Guy de Chauliac emphasizes the importance of this skill for both doctors and surgeons so that they can prescribe and mix the necessary medicines even if they are working somewhere without apothecaries; near apothecaries who do not carry a wide range of products; or with the poor, who cannot afford expensive medicines.¹ The ability to estimate the qualities of simple medicines allowed the medical practitioner to make practical substitutions that still followed the healing principles of the standard medicine. With these theoretical tools, medical practitioners were freed from having to either memorize the traits of all medicines or always carry a pharmacopeia with them.

Medieval scholars and doctors were first introduced to the judgment of medicines through Arabic sources such as the *Pantegni* and Isaac Israeli's *Liber dietarum universalium* and found it reinforced in later translations such as Avicenna's *Canon medicinae* and Haly Abbas's *Liber regalis*.² However, the Arabic authors included reasoning by flavor, odor, and color among many other tools of rational judgment. The explanation of reasoning out the qualities of medicines in the second book of Avicenna's *Canon* is a good introduction to the information given in Arabic texts. He begins with a review of what other medical textbooks, such as Haly Abbas's *Liber regalis*, said about recognizing the powers of simple medicines through reasoning. These other books begin with various tests of medicines to determine their qualities, such as the speed with which a medicine becomes heated or burnt or how quickly it congeals (i.e., how quickly it reacts to cold). Another common test

of medicines is examining their flavors, odors, and colors. Sensory investigation has basic rules that allow the doctor to determine the qualities of the medicine. Avicenna explains that

it is not possible for sweet, bitter, or sharp flavors to exist except in a hot substance. Nor may there be astringent, harsh, or sour flavors except in a cold substance. Similarly, good, sharp odors may not exist except in a hot substance. White colors may exist in congealed bodies in which there is humidity only if the substance is cold, and, in bodies in which there is dryness and pulverization, they may not exist except in a hot substance. Black colors may only exist in things whose qualities are the opposite of these [the above-mentioned white substances]. Indeed, cold whitens a humid substance and blackens a dry substance, while heat blackens the humid and whitens the dry. And this is true and necessary. Nevertheless, as other canons of medicine point out, medicines sometimes differ from their significations, especially in odor and heat and in color.³

Color, odor, and flavor can provide important hints to the nature of the medicine since they tend to follow rules such as those outlined above. However, since medicines are mixtures of different elements, both naturally and artificially, a medicine may trick the powers of observation. In particular, odor does not always signify the true heat of the medicine, and color is in general not a trustworthy indication. For example, a medicine might present a color from one of its elements and an odor from another, or it might show two colors that are contrary in signification, such as black and white. Thus, sight, smell, and taste do not judge medicines equally. Flavors reveal the qualities of medicines best because the whole substance of the flavored matter physically touches the tongue, while neither odor nor color reaches the sense organ materially. Because it is, for all practical purposes, unmediated, the sense of taste gives a better indication of the whole substance of the medicine. However, odors are second best because they are similar to flavors. Colors have the least use in judging the qualities of a medicine because they affect the sensitive soul in a purely spiritual way.⁴

Thus, according to Avicenna, the most useful aspect of odors in judging medicine is their relation to flavors. As with flavors, certain odors indicate certain qualities in the medicine. Odors themselves are hot, since they are vaporized matter, and vapor can only be raised by heat. However, odors can come from both hot and cold things in Avicenna's modified Galenic conception of odor. Thus, odors can signify and even contain cool matter as well as hot. Avicenna explains that sharp and sweet odors signify heat in the medicine, while sour odors and those from moist things are cold. Almost all good-smelling things are hot, with a few exceptions such as camphor and water lily. The heat of most good odors is so intense that it can cause headaches, which means that they are excessively hot, especially to the cold human brain.⁵

In addition to their relation to flavors, the more general division of odors into good and bad is meaningful. Haly Abbas explains that some odors, such as those of onion and garlic, are as strong to the sense of smell as they are to taste. Indeed, nearly everything that has a flavor also has an odor. Haly Abbas points out that

there are many things man has never tasted because of their fetidity, such as dunghills and other things of fetid odor. Nevertheless, men know their nature from their odor. They also do not wish to eat them because of the strong certitude about them that comes from their odor.⁶

Because strong odors can provide reliable information about an object, it is not necessary to taste everything in order to determine the qualities of objects.

Sometimes, however, odor is less dependable in communicating the nature of an object. Odors have particular strengths and weaknesses in judgment. While odor is useful in indicating the nature of a simple medicine through similarity to flavor or of a strongly good- or bad-smelling object, it may fail the inquiring physician when the medicine is either odorless or of a mixed nature. Haly Abbas demonstrates the latter variety of medicine using a Galenic example that became a favorite of Arabic and Latin authors: the rose. He points out that things with a mixed nature, such as roses, tend to smell good. However, taste does not communicate the same information about the makeup of the rose as smell does. The flavor of roses is bitter (*amaro*), harsh (*aspero*), watery (*aquoso*), and generally unpleasant (*insuavi*). Bitterness comes from the part of the rose that is hot and finely textured, while harshness arises from the cold, coarse parts, and the watery flavor derives from parts that have a moderate texture. Since the sense of taste perceives all the parts of the rose, it perceives three distinct (unpleasant) flavors. On the other hand, the pleasant scent of the rose indicates heat. Therefore, all that can be judged from the odor of the rose is that all of its parts contain some heat.

The usefulness of odor both derives from and is hampered by its nature as a subtle, hot vapor. For foods or medicines that are hot or composed of fine substances, odor is an excellent judge. However, for other medicaments, odor will only convey information about parts of the substance that are subtle and capable of becoming vaporous when acted upon by heat. Some things have no odor, such as salty and sweet substances. Smelling them is pointless, either because they do not release much odorous vapor or because the texture of their vapor is too fine or too coarse for the sense to pick up. Things with mixed qualities such as roses often misdirect the senses with a good odor, which typically indicates heat, when their true qualities are primarily cold. For all of these reasons, Haly Abbas concludes that “judgment of the complexion of things by odors is considered less trustworthy [than by flavors].”⁷

Neither Haly Abbas’s nor Avicenna’s discussion of methods of judging medicines was limited to flavor, odor, and color. However, medieval European

texts tended to focus on investigation through the senses. Charles Burnett has brought to light a short Salernitan text of this genre, the anonymous *Summa de saporibus et odoribus*.⁸ Burnett located the *Summa* in three extant manuscripts, two thirteenth-century and one fifteenth-century, and in one pre-1160 manuscript that was destroyed in World War II.⁹ Sources for the text include Constantine's *Pantegni* and Isaac Israeli's *Liber dietarum universalium*.¹⁰ The *Summa* is comprised of an introduction and separate chapters on using taste and smell to judge the natures of things. The author adopts Isaac's two ways of discovering the nature of things, by experiment and by reason.¹¹ Experiment includes such tests as how quickly or slowly something is digested. Reason, however, is limited to the information provided by flavor, odor, and color. The author dismisses hearing and touch because none of the substance of the object reaches the organ in these senses. Similarly, sight is untrustworthy. For example, "when we see a white thing, because white occurs through coldness and is the daughter of coldness, we judge the thing to be cold according to sight, when it is naturally hot, such as garlic."¹² Therefore, because no matter reaches the sense in vision, just as in hearing and touch, "sight hardly grasps the natures of things at all."¹³ Smell and taste are better judges because some of the matter of the object touches these senses. However, odor can also deceive the mind about the qualities of a substance. The reason odor is not fully trustworthy is its fumous nature. Because odor is largely spiritual, there is not enough matter to reliably communicate the nature of an odorous object. Sometimes the fumes released from an object are too fine to be perceived by human olfaction at all. In other cases, such as that of camphor, the odor seems aromatic and therefore hot, but the substance is in fact cold in most of its substance. Not only is a fumous odor itself not necessarily resolved from the whole substance of the object, but also the fume can be corrupted by fetid air before it reaches the sense instrument.¹⁴ The text of the *Summa* goes on to discuss the opinions of ancient authors on what could be known about smell and the three types of fume, closely following Isaac's text. However, it adds the Galenic-Arabic sense organ.¹⁵ While none of the matter of the thing reaches the sense in the case of vision, some small amount seems to come into the sense with smell. However, in taste, "the whole of the thing's substance and all its properties ... totally mixes with the instrument," so that the sense understands all the properties of the food or medicine being examined.¹⁶ Thus, the *Summa* reinforces the teaching of Arabic medical manuals.

The ordering given here (taste first, smell second, vision a distant third, and hearing and touch equally useless) mixes up the well-known ordering of which senses are most trustworthy and most communicative of knowledge (sight, hearing, smell, taste, and touch). Burnett highlights this different arrangement, attributing it to the difference between the interests of philosophers and those of doctors.¹⁷ Instead of a hard conceptual divide between philosophers and physicians, a likely reason for this reversal is that the judgment this text and others like it are advocating is a judgment of

physical qualities as they affect the body internally. This specific use disqualifies touch and hearing completely and almost entirely nullifies visual information as well. For this purpose, instead of being a muddy intermediary sense between the pairs of spiritual vision and hearing and physical taste and touch, smell was the second most reliable of the human senses. For other purposes, both doctors and academics ranked the senses differently.¹⁸

That texts on the judgment of medicines were used in teaching is evident in the *Prose Salernitan Questions*, the oldest known manuscript of which was composed around 1200. The *Prose Salernitan Questions* is a collection from eleven different Salernitan or Salernitan-influenced manuscripts edited by Brian Lawn.¹⁹ Both the verse and prose questions became part of scholastic disputations in universities in the thirteenth century, and they remained in circulation for the next 400 years.²⁰ The *Questions* include inquiries into judging the properties of things by odor, and the discussions of odor reveal logical questions that might arise from readings texts such as the *Pantegni* or Avicenna's *Canon* that provide an overview of olfaction. For example, since odors always come from the hot parts of a thing, how are some odorous substances, such as rose and myrtle, cooling to the body? The textbook explanations of judging things by flavor, odor, and color do not always address this problem. The *Questions* reply that

in things presenting heat and odor, many cold particles are [also] resolved from the nature of the substance. Whether they go into the brain immediately or are distributed in the air, they are cold and are consumed more slowly because of their coldness. Nevertheless, when they reach the cells of the brain, they check its imbalance.²¹

Things such as roses are mainly cold, but odors are resolved from objects by heat. How, then, are roses cooling? The answer is that, since the rose is mostly cold, cold particles are resolved from it, perhaps along with a smaller number of hot particles. The odor of the rose cools excess heat in the brain because of its natural coolness. The odors of cool things will, however, act more slowly than those from hot things. The same solution is offered to a question on how camphor cools sexual desire when odor is basically hot (and heat causes desire).²²

The discussions of roses and camphor are further explanations of specific examples given in the textbooks. The *Questions'* discussion of odor is more nuanced when it asks why everything that is hot and emits a fume does not produce odor. The text explains that

three things [must] coincide for odor to be made: 1) aptitude of substance, so that it is not too dense, as are gold and yellow orpiment [arsenic sulfide]; 2) mediocrity of fume, so that it is not too subtle, lest it dissipate through subtlety before it can affect the instruments of smell, which happens with pepper and cubeb and similar things; and 3) heat dissolving

the substance. Therefore, since there are many things that are hot and emit fume that do not have one of these three accompanying them, they consequently produce no odor.²³

Odor requires a balance between fineness and coarseness. If the substance is too dense, such as gold, it will not produce any fume or vapor at all. If the fume produced from the object is too fine, such as that of pepper, it will dissipate before it reaches the sense organ. Therefore, anything hot that produces fume or vapor that is immoderate in the texture of its parts will not produce odor. Finally, if there is no heat, which is necessary to raise odor from an object, the object will not have scent.

The judgment of food and medicines using reason was not just a theory within the *Questions* but an applied method. There are three queries on peacocks, all of which use the scent of peacock flesh as an indicator of its qualities. Two questions ask why the peacock is so colorful and conclude that it is because the peacock is a hot and dry bird that does not produce many superfluities. Those that it does produce come out in its beautiful plumage or, in the case of coarse superfluities, in its ugly feet. Some of the primary proofs of its hot and dry nature are its fragrant flesh and the fact that the flesh does not decay for a long time. The fragrance of peacock flesh itself is an indication that it is moderately humid and very hot.²⁴ The lack of putrefaction is an effect of the hardness of the peacock's parts. One question links the preservation and fragrance of the flesh to the viscosity, hardness, and solidity of the peacock. It argues that the slow decomposition and fragrant odor of peacock meat are evidence of hardness and viscosity, because the two qualities indicate that the peacock's body produces few superfluities. For a body to contain few superfluities, it must be viscous enough to purify and expel those that arise.²⁵ The process of purifying superfluities produces odor, and the purified flesh is harder than it was before. Thus, the fragrant, incorrupt nature of peacock flesh signifies solid and dense tactile qualities in the same flesh.

The third question explains why the peacock spreads its wings when it is being praised: the peacock's hot and dry nature gives it a stronger imagination, so that it recognizes when it is being praised and spreads its wings so that it can be admired more. The proofs of its hot, dry nature are that its flesh will last for a year without rotting and the aromaticity of its flesh. Whatever superfluities the heat dissolves are consumed by the dryness, and then heat burns that excess dryness. This cycle explains why hot and dry things smell so much more strongly and sweetly than other things, and it is likewise true for peacock meat, to the extent that "among neighbors, it is not possible to eat it secretly, for it is revealed by its odor."²⁶ In these questions, hot and dry peacock flesh is given the preservative qualities of hot and dry spices. The fragrant odor of the flesh betrays its qualities, and those qualities lead to slow putrefaction of the flesh, brightly colored feathers, and a hot and dry brain that allows the peacock to recognize admiration better than other animals.

Arabic medical manuals taught a variety of methods for discovering the qualities of medicines through experimentation and reasoning. Medieval Europeans focused on the sensory portion of judging medicines, producing a stand-alone text devoted to the skill of deciding on the qualities of medicines by their flavors, odors, and colors. These were perhaps the simplest methods offered by the Arabic texts. A practicing doctor would find it simpler to taste or smell an unknown medicine to discover its qualities than to find a place to burn it in order to judge how quickly it caught fire. Sensory investigation was also less destructive than burning or congealing the medicine to estimate its qualities. A doctor who knew how to judge the qualities of medicines quickly with his own senses would be able to substitute another medicine for one that was unavailable or too expensive for his patient to buy. The sense of smell was a useful tool in making these judgments. That this skill was practiced is evident in the questions and examples of the *Salernitan Questions*, which give glimpses into the discussions that took place in medical schools.

Odors in diagnosis

Smell was used similarly in the diagnosis of illness. Physicians and surgeons considered the odors of breath, sweat, sputum, blood, excrement, urine, pus, and other bodily secretions in coming to a conclusion about a patient's illness.²⁷ The descriptions of the odors of these emissions in medical texts is often flavor-related, because a sour or a sweet smell, for example, was a sign of a particular humoral balance when it occurred in blood, urine, or sweat. General good and bad odors were also important diagnostic indications. Stench was always a sign of corruption and imbalance. Although some secretions, such as excrement, were naturally fetid, the trained doctor would distinguish an unnatural stench from a natural one and recognize it as a sign of illness. Furthermore, diagnostic odors were not always those that the physician perceived. Perception of a fetid odor that was not there or misjudgment of a stench as a sweet smell and vice versa were signs of specific illnesses. The loss of the sense of smell altogether also indicated a problem. Finally, while the doctor's goal was usually to treat the underlying condition in order to correct the imbalance, physicians also commonly prescribed cures for a bad odor in itself, particularly bad breath and fetid sweat.

Among the important Arabic texts translated in the twelfth century were treatises on urine. Indeed, all the Arabic medical compendia advised practitioners to think about the color, odor, flavor, and texture of everything coming out of the body, just as doctors judged medicine based on color, odor, and flavor. Avicenna's *Cantica*, which was originally written in verse as an aid to memory, was translated into Latin prose at the end of the thirteenth century. The text includes reminders on what the color, odor, and consistency of urine signify but nothing concerning its flavor, perhaps because physicians preferred not to taste urine if they could diagnose it using another sensory quality. Avicenna explains that lack of odor in urine indicates either lack of

digestion or indigestible food.²⁸ A “foreign, horrible odor” means that the patient has a disease of the bladder.²⁹ In general, when smelling urine, “all that is of ultimate stench is of ultimate corruption.”³⁰ Averroes’s commentary on this text adds that fetid urine signifies corruption in the patient’s body.³¹ Other indications combined with fetid odor to point to a diagnosis. For example, in the *Canon*, Avicenna explains that black urine with a strong odor signifies an illness caused by heat, while black urine with either a weak or no odor signifies a cold sickness.³² Avicenna had already pointed out in his overview of judging medicines by color, odor, and flavor that the color black can indicate either a cold or a hot substance.³³ However, cold does not communicate odor well since it requires heat to come into being. Texts on the sense of smell frequently note that cold destroys odor, since it owes its existence to heat. Thus, black urine with a strong odor must be hot, and black urine with no odor or a weak odor must be cold. In this way, diagnosis of illness by bodily excretions follows exactly the same principles as judgment of the qualities of medicine.

Medieval doctors made diagnoses based on such indications, particularly those revealed from the inspection of urine. Uroscopy was so frequently practiced that the urine flask became the symbol of a doctor in medieval art. The equally common practice of phlebotomy, the therapeutic draining of blood, also considered the odor, flavor, color, and texture of blood as clues to a patient’s condition. Guy de Chauliac explains in his surgical manual that blood should be moderate in its texture and temperature; have a pure, red appearance; and be pleasant in odor and flavor. Guy does not give this blood a temperament, but presumably it is sanguine. Any difference in any of these qualities means there is an illness in the body, and Guy names the imbalances after the other three medieval temperaments. Thin, yellowish, bitter blood with a sharp odor is choleric; thick, black or yellow, sharp-tasting, and sour-smelling blood is melancholic; and sticky white blood with a sweet, watery flavor and odor is phlegmatic.³⁴ Phlebotomy was usually practiced by surgeons or barbers but sometimes was prescribed or practiced by physicians.³⁵ Barbers, for whom apprenticeship and training regulations varied, may or may not have considered the color, odor, flavor, and texture of blood; however, surgeons and physicians literate in Latin or, later, the vernacular were certainly urged to do so by all textbooks.³⁶

Odor as an indication was not limited to uroscopy and phlebotomy. Guy de Chauliac asserts that “if stench proceeds from any member, it should be cured. If it comes from some sickness, it should also be cured, just as if there were ulcers or abnormal growths of pustules or blockages, they should be cured.”³⁷ Stench was itself a sign that something was wrong, and it required treatment just like visible signs of sickness. Thus, in addition to noting the odors of sweat, sputum, pus, and other excretions in descriptions of illnesses, medical and surgical manuals included chapters on stench coming from body parts such as the mouth and the nostrils. The primary concern was to identify the source of the stench and treat it. When the underlying conditions were resolved, the stench would also go away.³⁸

For example, the *Salernitan Questions* explain that the cause of fetid saliva or phlegm might be in the lungs, gums, throat, nostrils, brain, or stomach. The text suggests, however, that the stomach is the most frequent cause when it explains that cold humors in the stomach can putrefy and make fetid saliva, the fume of which rises up to the head and causes bad breath. The cure is to purge the stomach with odoriferous medicines.³⁹ In this case, the concern is not to cover the smell but to heal the too-cold, putrefied humors of the stomach with hot and dry aromatics, which also had the effect of preventing corruption of humors. The thirteenth-century *Compendium medicinae* of Gilbert the Englishman (fl.1240–60) similarly explains that bad breath might be caused by rotten teeth or gums or from an illness of the stomach. Aromatics figure prominently in the cures but, like the cure in the *Questions*, the main purpose of the medicines was not to treat the bad breath. Gilbert does, however, offer palliative remedies for bad breath for women, whom he considers to be especially concerned about covering it up. He advises them to hold laurel leaves, musk, or other aromatics under their tongues.⁴⁰ The *Trotula*, which may have been one of Gilbert's sources, also advises laurel leaves and musk under the tongue to cover bad breath.⁴¹ However, it first prescribes a cure for bad breath caused by putrid gums, which is treated with quicklime, sulfur, and orpiment (an arsenic sulfide found in natural hot springs). If anything, the cure was fetid, which the text recognizes by allowing the patient to sprinkle her mouth with a powder made of cinnamon and roses after the putrid flesh had been consumed by the medicine.⁴² The *Trotula* prescribes similar unaromatic or even stinking cures aimed at the root causes of bad breath caused by illness in the stomach or intestines and for the treatment of stinking sweat.⁴³

The lack of perception or misperception of odor was also an indication of illness. According to Avicenna, the accidents that befall the sense of smell can only be of a few types. Either the sense is weakened or destroyed, in which case the patient senses odors weakly or smells nothing, or the sense is corrupted, in which case the patient thinks that good odors are bad and bad odors are good, "such as someone who senses the odor of excrement as good and hates aromatics."⁴⁴ These problems can occur because of an overall bad complexion, bad humors clogging the front of the head or the region around the olfactory organs, blockage of the ethmoid bone, abscesses in the nose, cancer, or an abnormal growth of flesh inside the nose, such as polyps. Bad complexion can be induced by medicines or even bad air. Additionally, the olfactory nerves can be damaged when the patient is injured, so that he smells nothing.⁴⁵

Thus, loss or change in the sense of smell was often a sign of another condition. For example, Bartholomew the Englishman explains that weak perception of odors might only indicate nasal polyps, but lepers are also hardly able to distinguish good from bad odors because of the humors blocking their sense of smell. Misperception of odors might indicate illness as well: melancholics are among the badly complexioned people who think that fetid odors are pleasant and aromatics are unpleasant.⁴⁶ Most frequently, loss

or mutation of smell was a symptom of humors blocking the nasal passages or the perforations in the ethmoid bone in colds. However, Avicenna declares that when a sick person senses a sharp, fishy, muddy, or buttery odor that is not present, then it is a sign the patient will die.⁴⁷

Through the communicative abilities of odor, the sense of smell was an important tool in the diagnosis of illness. The similarities between odors and flavors allowed medical practitioners to identify illnesses without going so far as tasting the secretions of patients, while an unnaturally bad odor was always a sign of an imbalanced complexion. The patient's sense of smell was also important. While it most often indicated a cold or overgrowth of flesh in the nostrils, changes in perception of good and bad odors or the smelling of phantom odors of any sort were signs of more serious illnesses.

Good and bad odors

The relation of odors to flavors often communicated important information about the complexion of the odor. However, as we have seen, the general categorization of odors into good and bad was also significant. In the case of the peacock, the *Questions* notes not a specific flavor-related odor of the flesh but rather a general aromaticity. In other words, peacock meat smells good. Good odors are almost all hot and dry in quality. Therefore, the peacock has a hot and dry nature. Conversely, any odors that come from cold or coarse things are typically fetid, like Haly Abbas's dunghills. What made up a good or a bad odor was a frequent topic of discussion in any text that addressed medicine, the senses, or the soul.

The *Questions* explain that two things are necessary for producing a good odor: "abundance of natural heat and mediocrity of humidity. Indeed, such heat is strong enough to cleanse such humidity from superfluities, as it appears in musk."⁴⁸ This short explanation of the components of good odor also provides all the elements necessary for understanding why some things smell bad, which is another problem the text treats. If good odor requires heat and not too much humidity, then lack of heat and excess humidity causes stench. The *Questions* relate that

three things cause a fetid odor: abundance of external heat, weakness of natural heat, and excess of humidity. For example, when something has weak natural heat, it is not able to consume superfluities. Since they have not been consumed but remain in the object, they generate corruption and produce a fetid odor. This occurs in human excrement. Corruption and fetid odor also occur because of abundance of humor, as in hemlock. Finally, corruption or a corrupt odor also arises from a concentration of unnatural heat corrupting the body, just as happens in a fetid corpse.⁴⁹

Fetid odor is caused by an excess or a lack of a certain quality in the object. As we saw with good odors, heat and dryness are preservative of things and

produce a pleasant odor. Stench can be caused by excess heat in something that is naturally humid, such as a corpse. The sun heats a dead body more than it is supposed to be heated and corrupts the humors in the body. This is also an effect of a lack of natural heat. If the body were alive, it would be less likely to rot, because natural heat destroys excess qualities in objects. Without natural heat, superfluous qualities, particularly humidity, cannot be destroyed, and therefore the object stinks. The text's example of this type of stench is excrement. The digested food is dead and no longer contains natural heat, so it stinks. Finally, excess humidity causes stench because there is more of that quality than can be dissolved by natural heat. This is why hemlock smells bad. Indeed, excess humidity will nearly always rot and cause a stench.

Anything that stinks is likely to be too cold, too moist, or suffering from unnatural heat that causes the other qualities of the substance to dissolve excessively. Thus, the general division of odor into good and bad was meaningful in itself. Because of their opposition in qualities, good and bad odors usually had opposite effects. Bartholomew the Englishman provides concise definitions of the powers of both good and bad odors. Good odor has a variety of positive effects. It communicates the nature of the odoriferous object from which it came, which is the purpose of odor in the literature on judging the qualities of medicines. It crosses long distances. It also affects health by strengthening the spirits in the brain and heart, consuming excess humidity before it rots and corrupts the body, and blocking stench so that it cannot enter the body. Finally, it is generally pleasant for both men and animals.⁵⁰

Bad odor develops when something is corrupted, just as the *Salernitan Questions* argued. Drawing information from Isaac Israeli, Bartholomew explains that a stench indicates that the substance from which it emanates has become corrupted, either because of unnatural heat or because the moist humors of the body have rotted. However, these two causes of stench create odors of different intensity:

When unnatural heat brings about boiling of the humors, it is a cause of putrefaction and stench. Nutriment from these humors generate corrupt and terrible putrefaction in the stomach, from which the worst fumosity is resolved that weighs down the head. When only corruption of humidity is the cause, then not a fetid [*foetens*] but a heavy [*gravis*] odor is generated. All things hot are bad for nutriment, because of heaviness of odor. Nevertheless, they are less harmful than fetid, rotten things are.⁵¹

Bartholomew complicates the Salernitan discussion of stench by including the two kinds of bad odor that Isaac Israeli had identified: heavy and fetid. Heavy odors arise from the corruption of humidity and are less stinking and less harmful than truly fetid odors, which are caused by the corruption of all the humors. In general, a bad odor signifies corruption of the odoriferous object. More specifically, stench has powers opposite to those of good odor. Like good odor, bad odor indicates the nature of its subject, but it is a

corrupt and deficient nature. Rather than merely crossing air, stench infects air. Instead of healing, it corrupts the animal spirit in the human body and distempers the complexion. It causes nausea and headache, and it is generally unpleasant to the sense of smell.⁵² Fetid odors are more than just unpleasant, however. Bartholomew warns that “stench is infective of the spirit and nerves and produces a change from natural to unnatural consistency, as is clear in lepers, whose fetid breath infects and corrupts healthy people.”⁵³ Bad odors not only signified illness but could create imbalance in the complexions of healthy individuals and thereby cause disease.

Stenches were dangerous to health. Fortunately, they could be warded off with good odors. Hot and dry aromatic odors could block the opposite qualities, cold and moist, which were primary components of most fetid odors. Bartholomew connects this power with the qualities of each type of odor, specifically the hot and subtle nature of aromatics as opposed to the dense, coarse, cool nature of bad odor. Good odor reaches the animal spirit more quickly than bad odor, because good odor contains healthy natural heat that refines it so that it can reach the brain more quickly because of its subtle parts. It also moves quickly because it is hot. Bad odors, however, come from objects that are weak in natural heat, so that the odors carry coarse superfluities. It is difficult for coarse, cold objects to release any odor at all, but when they do they are slow and thick and therefore cannot reach the olfactory spirit in the brain as quickly as a good odor.⁵⁴ Furthermore, spiritual, or airy, and finely textured good odors are more similar to the spirits in the brain than coarse and earthy bad odors, so the spirits receive good odors more readily.⁵⁵

A related explanation of the quicker perception of fragrant things is that the soul prefers good odors over bad. The *Questions* ask why musk does not seem aromatic if it is among other good-smelling things but, if it is put somewhere that stinks such as a latrine, it seems aromatic again. Musk, according to the *Pantegni*, is hot and dry in the third degree.⁵⁶ In the system of classifying medicines into four degrees of heat, coldness, dryness, and humidity, musk is very hot and dry and should therefore always be fragrant. The *Questions* provide several explanations for why this strong aromatic sometimes has a weak odor. First, when musk is surrounded by other aromatics, its heat and dryness combine with the same qualities in the other aromatics so that all the aromaticity, the good odor, of the musk is used up and only the coarser, less fragrant, less good-smelling parts remain. This explanation aligns with the concept of too-subtle odors that dissipate before they reach the sense. The second reason is that the soul does not notice the musk because it is occupied with perceiving all the other aromatics, especially since the musk has become less fragrant through the first process.

When musk is among fetid smells, on the other hand, it becomes purer, and thus more fragrant, through the action of the external heat of the fetid aromas. After reading Bartholomew's discussion of stench, we might expect external heat to cause musk to corrupt, that is, to rot. The *Questions* do not raise this problem. However, the author might have responded that it is much

more difficult for hot, dry things to be corrupted by external heat because they are already designed to consume superfluities, just as the peacock's body does. Finally, the musk may have gotten 'dirty' and become superficially tainted by a fetid odor.⁵⁷ In that case,

when [the musk] is put to the nostrils, the soul, because of the horrible-ness of the fetid odor, more avidly and more fully perceives the odor of musk that is delightful and friendly to it, since nature takes more pleasure in an odoriferous thing than in a fetid thing.⁵⁸

Since the soul prefers good-smelling things, it can elect to perceive them instead of bad smells.

Odors, the soul, and the spirits

Most medieval medicines were odoriferous. Although the odor was not always the main purpose of the medicine, it both revealed and often added to the healing qualities of the substance through the general powers of good and bad odors. Fragrant medicine not only was more acceptable to the soul than stinking or neutral medicines, but it also strengthened the spirits in the brain, heart, and liver, the most important organs in the body in medieval medicine. Spirit was *pneuma* in Greek sources such as Galen, and it was translated as *spiritus* in Latin. Both names suggest wind, breath, and air, because the origin of and main source of nourishment for the spirits was the air breathed into the body. According to Galen, a part of inspired air was drawn into the blood and refined within the major organs until it became various types of spirit. The fully formed spirits traveled throughout the body to aid in functions such as sense perception and movement.⁵⁹ For example, the animal spirits located in the brain were the most refined of the spirits. In sense perception, they carried information between the organ and the brain by gathering the species, the information about the perceived thing, out of the information carrier that struck the sense (in the case of smell, fumous air). The information-bearing spirits traveled back through the nerves into the brain so that the latter could understand and store the sense information.

In medieval sources, the body's spirits were hot, dry, refined, and essentially fume-like substances. Because spirit was created by air, good odors that were breathed in with the air could create stronger spirits, while bad odors might harm the spirits. The likeness between odors and the spirits meant that some of the medical powers of odors were not merely corrective of occasional imbalances but necessary to the body. Scholars of the thirteenth century established the importance of odors to the spirits as nourishment, which both supports Aristotle's argument that odors are necessary for the body's health and contradicts his argument that they are not nourishing. In the fourteenth and fifteenth centuries, physicians began to test how far the concept of

nourishment by odors could be stretched, even suggesting that odors could nourish the entire body.

Avicenna establishes the necessity of odors for strengthening the spirits of both the heart and the liver in *De viribus cordis*, which the Valencian physician Arnau de Vilanova translated in the early fourteenth century. First, he reminds us that the powers of the body have an appetite for the qualities that they require, such as “aromaticity and sweetness”:

Indeed the olfactive, gustative, and natural virtues desire them and are even naturally inclined towards them. Of two medicines equal in virtue, the sweeter and more aromatic is more efficacious in healing, because the attractive power of the members receives it more strongly and the spirit is then more quickly nourished, if the medicine has the power to nourish. For that reason, the spirit accepts it more quickly, inasmuch as it is medicine. The substance of aromaticity is a vaporous or fumous substance. The substance of sweetness, however, is a coarse terrestrial substance, and therefore aromatics are more suitable for nourishment of the spirits and sweetness to the nourishing of the body.⁶⁰

Here we see the usual simultaneous connection and differentiation between flavors and odors. Aromaticity is a quality of odors, usually the odors of spices. Specifically, it describes the best odor, which is hot and dry in quality. Sweetness is a flavor and, according to Isaac Israeli (and Bartholomew the Englishman, who cites him), it is the most nourishing flavor.⁶¹ The flavor called sweetness, *dulcedo*, does not transfer easily into odor because of its coarse, earthy nature.⁶² The body requires the nourishment of both good odors and good-tasting food, but they nourish different parts of the body. Vaporous or fumous evaporation is ideal for nourishing spirits because of its similarity in substance to the spirits. Aromaticity is particularly important for strengthening the spirits of the heart, which is “the source of generation of nutriment for the spirits,” because physical matter cannot nourish the spirits.⁶³ Sweetness, a flavor, nourishes the liver, because the liver is mostly tasked with nourishing the body. However, since the liver is involved in producing the natural spirit, aromatics aid the liver as well.⁶⁴

Although *De viribus cordis* was not translated until the fourteenth century, the concept of odors physically nourishing the spirits of the brain and body already existed in the overviews of smell in Arabic texts that were available beginning in the late eleventh century. Medieval authors seized on that point because they needed to reconcile the idea of odor as matterless species, quality, or intention and odor as a healing substance. Albertus Magnus, Peter of Spain, and Pietro d’Abano all considered the question of odor’s ability to nourish. Furthermore, the nourishing abilities of odor only increased after the thirteenth century, despite Aristotle’s firm contention that odors did not and could not possibly nourish the body. While Albertus and Peter do not venture to suggest that animals or humans could live on odors alone, Pietro

d'Abano does, as do Gregor Reisch in his textbook and Gabriele Zerbi in his guide to care of the elderly.

Although the human brain may not sense odors strongly, all Greek and Arabic authorities, including Aristotle, agreed that odor balances the nature of the brain, particularly when it brings in heat. However, Aristotle is clear in *De sensu* that odor does not nourish:

Some Pythagoreans irrationally say that certain animals are nourished by odors. First, we see that it is clear that food is composite, and things that nourish are not simple. Therefore, too, superfluities of food occur, either in themselves or outside of them, just as in plants. Furthermore, water, unmixed with anything, cannot nourish by itself alone. Something corporeal is necessary for creating nourishment. For that reason, it is much less rational for air to be made into a corporeal thing. The need for a physical form is why there is a place receptive of food in all animals, from which the body, taking in the food, accepts it. However, the sensorium of odors is in the head, and odor enters with airy evaporation. Consequently, it goes to the place for breathing. Therefore, odoriferous things do not confer nutriment through their odor. Nevertheless, it is clear, both from the sense and from what has been said, that odors do aid health. What flavor does in nutrition and for nourishment is what odoriferous things do for health.⁶⁵

Aristotle makes three arguments for why odor cannot be nourishing. First, odors are simple, essentially having the nature of air, but food requires complexity and corporeal being. Second, food creates superfluities, which odors do not do. Finally, odors do not go to the place for digestion, the stomach. Instead, they go from the sense organ in the head to the lungs, since they are breathed in with air. However, odors as sensibles do aid in health. Aristotle's parallel between flavor for nourishment and odor for health is, in fact, similar to Avicenna's argument, except that Avicenna describes the healing abilities of odors as nourishing.

Albertus Magnus examines the question of whether odor can nourish obliquely, as part of the question of whether odor is a simple quality or a composite substance. He notes all three of Aristotle's arguments as reasons that odor should not nourish. On the other hand, however, Aristotle also says that nothing that leads to a desire to eat is simple, and odor can certainly induce hunger. Similarly, anything that is sensed through differences of composition is composite. Flavors are sensed through differences of composition, and odors are similar to flavors, so they must be composite. Albertus resolves this contradiction in Aristotle by arguing that smell exists both as a quality and as a substance, either vapor or the vaporative dry. He explains that odor can be considered both a simple, matterless quality and a composite substance. As a sensible, odor is a simple quality, because the senses can only perceive qualities. Odor as a quality has the nature of air and cannot

nourish. Nevertheless, Albertus argues that since odorous vapor comes from coarse, composite bodies, then it is also composite matter, which means it can nourish.⁶⁶ Unlike later authors, however, he does not specify what is nourished by odors, only ever writing of odors as aids to the brain.

Peter of Spain examines the question of whether odor nourishes the body and the animal spirits in more detail. Like Albertus, Peter argues that since odors are related to flavors, they must nourish. Indeed, they are the flavored dry, and flavor is nutriment by definition. Furthermore, many odorous fumes are resolved from food, which means that they are carrying nutriment. He also points out that, in their physical form, odors are not simple because they are composed from the four elements. Peter rules, on the side of Aristotle, that odors do not nourish the body. This is because the body is coarse and requires coarse nutriment, but odors are subtle, or fine, and so cannot nourish the body. Odors do, however, nourish the animal spirit in the brain, because odors are similarly hot, dry, subtle, and vaporous or fumous. He comes close to Avicenna's argument in *De viribus cordis* when he explains that

two substances proceed from the heart, of which one is hot and dry, and this is spirit; the other is hot and humid, and this is natural heat. Spirit is also a hot substance. Indeed, odor strengthens the spirit by reason of its heat, and it nourishes by reason of its subtlety of substance.⁶⁷

The two substances of the heart bear the same qualities as the two substances coming from food, the flavored humid and the flavored dry. They also resemble the two substances coming from the earth to create air, vapor, and fume, especially given the mistranslation of vapor as hot and moist instead of cold and moist in William of Morbeke's translation of Aristotle.⁶⁸ Rather than emphasizing odor's ability to heal the brain, Peter here, like Avicenna, highlights the importance of odor to the heart. Finally, Peter specifies that the odors with these powers are aromatics. Aromatic odors, which are particularly hot and dry, have four abilities: tempering cold, moist body parts; strengthening the members through their similarity to natural heat; strengthening the animal spirit (which also strengthens the members); and, in a brain that is already too hot, filling the head and harming the brain.⁶⁹ Three of the four powers of aromatics positively affect the body, while the last is only harmful to a body that is already ill. In general, as Aristotle argues in *De sensu*, Peter maintains that aromatic odors were created as an aid to human health and are necessary to it.

In addition to reiterating the evidence of Albertus Magnus and Peter of Spain, Pietro d'Abano makes several new points as evidence that odors nourish. First, he provides a path of digestion for odors in the animal spirits in the brain. Second, he demonstrates that while the elements in their pure forms cannot nourish, the elements do not exist in nature in this way. Therefore, even if odor is considered to be basically air, the non-elemental air that exists on earth is not pure and simple and therefore might nourish. Finally, he suggests

that the nourishment of odors might even be able to keep humans alive for short periods of time. Thus, Pietro demonstrates that odor is nourishing to the spirit, and that it is nourishing according to Aristotle's criteria.

Pietro begins his examination of whether odors nourish with Aristotle's assertion that odor strengthens the brain by altering its temperature but does not feed it. Contrary to Aristotle, Galen and most physicians posit that anything that pleases or benefits a body part is nourishing to it. The resolution of this problem lies in the twofold nature of nourishment. It acts either in the usual way, "as nourishment operating with its own matter, or metaphorically, acting by its own altering and strengthening quality until true nutrition finally follows."⁷⁰ The first type of nourishment is the usual digestion of food, while odor nourishes through the second process. Just as Albertus and Peter had argued, Pietro asserts that odor nourishes when it exists as vapor but not as it touches the sense. However, even though earlier authors had easily dealt with the problem of odor being capable of nourishing by separating its spiritual from its physical form, there was still no response to Aristotle's argument that odor does not go to the place of digestion. Pietro resolves the problem by providing an alternate place of digestion in the brain: first carried in vapor, odor is breathed into the trachea and transported to the lungs and heart. From there, it is passed on to the *rete mirabile*⁷¹ in the neck and partially digested, and at last it is allowed to permeate the brain, where digestion is completed and the spirit is nourished. However, sensing odor by itself does not lead to nourishment, because the senses only perceive forms without matter. The material nutriment that odor contains is instead filtered out through the process of digestion outlined above.⁷² Thus, Pietro settles the problem, which Albertus Magnus had noted but not solved, of a place of digestion for odors.

The mixed nature of odor is what allows it to nourish the body. In fact, because it is mixed, it must nourish. Pietro points out that the only mixed substances that do not nourish are poisons and other corrosive materials, such as quicklime and mercury.⁷³ Nourishment requires similarity to the thing it nourishes, and odor is similar to the spirits, since both are "subtle, airy, of easy alterability, resolvable, mobile, hot, and dry."⁷⁴ Odor and spirit share many qualities that enable the one to nourish the other. Pietro notes several arguments from sources such as the Alexandrian *Problemata* and the Pseudo-Aristotelian *De secretis* that even air and water, the two elements that carry odor, are nourishing by themselves, implying that if the elements nourish alone, then the nourishment of odors is unquestionable. According to Aristotle, though, simple elements are not nourishing. The solution to this problem is that elements are never found in their pure form in nature. Because they are mixed, "they are able to truly nourish, and especially things that require little nutrition, such as spirit."⁷⁵ Even the purest elements as they are found in nature can nourish, which anyone can see from the examples of basil and of fish and other small animals that survive in clear water with no other obvious source of food than the water itself. Therefore odors, which

come from the elements, are mixed and able to nourish, if only in a small way. However, the spirit needs little nourishment.

Pietro also assembles evidence that odors are healing to humans. In addition to Galen's repeated assertions in texts such as *De utilitate pulsuum*, *De iuvamentis*, and *De ingenio sanitatis* that breath and the odor that comes in with it nourishes the animal spirit, he points out that it is because odors are healing that physicians apply good odors to revive someone who has fainted. More generally, he notes that Avicenna advises in the newly translated *De viribus cordis* that a more aromatic medicine works better and more quickly than another that has the same healing qualities but is less aromatic because the soul enjoys the good odor of the former and incorporates it more quickly.⁷⁶

There are even stories of humans surviving on odors alone, at least for a short period of time. According to Pietro, John of Alexandria's commentary on Hippocrates reports that when the Greek philosopher Democritus was dying, the citizens of his hometown asked him to delay his death for three or four days, until an annual festival was over, so that the celebration would not be interrupted by grief over his demise. Democritus agreed:

He then ordered a cup of honey to be brought to him, and he survived there for four days by smelling it. Others say that he ordered the oven to be opened and breads to be cooked in it, and so he survived on the odor of bread. And perhaps this is true: [Pseudo-]Oribasius relates in his commentary on the Hippocratic *Aphorisms* that the Philosopher tells of a certain person who lived forty days on the odor of honey. But I think the account is corrupted through the addition of a zero to the figure denoting four.⁷⁷

In addition to the importance of odors in nourishing the animal spirits, Pietro seems to credit the idea that a person can survive on the odor of food for a few days. Although he grants odors limited effectiveness in sustaining life, his discussion of nourishing odors completely disregards Aristotle's arguments against the belief that animals could survive on odors alone.

By the fourteenth century, the power of odor to nourish the spirits of the brain and heart was one of its most basic functions. Avicenna's support for the idea in *De viribus cordis* was only reinforcement of a concept that medieval authors had already embraced. Late medieval authors were more interested in speculations that humans could survive on odors. Even Gregor Reich, in his brief, introductory explanation of olfaction, muses that "many inhabitants of India are said to live on the smell of a certain apple, and to die if they are separated from it for a long time."⁷⁸ Gabriele Zerbi includes this example and that of Democritus in his *Gerontocomia* (1489), a manual on medical care for the elderly. The anecdotes occur in the context of advising that old people should eat flavorful and good-smelling foods because they are especially nourishing. While foods of sweet flavor were considered to contain

the best nourishment, foods with good odor “are no less attractive to human nature; they are very nourishing. For this reason they say that a good smell is the food of the soul because it revives the spirits and lengthens life.”⁷⁹ As we have seen, odors themselves are nourishing apart from the more usual nourishment of food. Zerbi goes into no more detail about the strengthening and nourishing qualities of odors, however. Instead, his interest is in specific and extreme examples of nourishment of the body with odors. First, he cites the *Book of the Apple*, a Neoplatonic Arabic work sometimes ascribed to Aristotle. The text, known in Latin as *Liber de Pomo et Morte*, is a dialogue between Aristotle and some of his students while he lies on his deathbed. Ironically enough, Aristotle prolongs his life by smelling an apple as he imparts his final pieces of wisdom.⁸⁰ Zerbi also repeats the story of Democritus almost exactly as Pietro told it, drawing on a commentary of Galen’s *De sectis*.

Finally, Zerbi retells the story of the Astomi, which originates in Pliny, more accurately than Reisch:

Pliny also says that on the extreme boundary of India in the east near the source of the Ganges there lives a race of people who have no mouth; they live, however, by breathing an odor brought into their nostrils. They have no food or drink, only various odors of roots and flowers and of the wild apples which they bring from a distance so that their smell may not be lacking. They are easily killed by an odor which is somewhat stronger.⁸¹

According to John Block Friedman, the Apple-Smellers are among the more human of the monstrous races, even appearing normally clothed in fifteenth-century illustrations, so that the only way to identify them is by the fact that they are smelling apples or flowers.⁸² Thus, this example can perhaps be considered evidence of humans living on odors. In the cases of Democritus and Aristotle, old men on their deathbeds prolong their lives with odors, which is appropriate to the overall purpose of the *Gerontocomia*. The example of the Astomi reinforces the idea that odors have an inherently nourishing quality.

Thirteenth-century authors established that odor played an important role in strengthening and nourishing the animal spirits, which in turn strengthened the whole body. By the fourteenth and fifteenth centuries, scholarly interest had shifted to how effective odors could be in strengthening and nourishing the body. In the twelfth through fifteenth centuries, it was known that good smells were important to maintaining health in people who were not sick. In those who were, even if the aroma of a medicine did not directly address the imbalance in the body’s humors that had caused the illness, aromaticity would likely increase the effectiveness of the medicine for two reasons: first, the soul would accept it more quickly because it liked the good smell and, second, the good odor would strengthen the patient’s body by supporting two or perhaps even three important members, the heart, brain, and liver, in their normal functions.

Odors in medical treatment

Because of their effects on the body and soul, odors were powerful tools in the treatment, diagnosis, and general maintenance of health. Odor was not always the point of an odoriferous medicine. However, there were cases in which a treatment required a fume of some mixture of qualities. Because odors were first drawn into the brain, odor cures were frequently prescribed for headache and other illnesses of the head, such as melancholy and lethargy. In the case of headache, odors of specific qualities could ease the imbalance of excess heat or cold that caused the pain. In mental illnesses, odors were a fast, targeted treatment for badly complexioned spirits. Another common treatment that relies on odor's effects on the spirits was fumigation for uterine suffocation. In this condition, the body's complexion became imbalanced and the spirits fled away from the uterus. They could, however, be simultaneously coaxed into place and rebalanced with the use of odors. Odor was also thought to have an effect on the sexual abilities of men. Because of the working of the spirits, sexual dysfunctions in both sexes could be treated with odor, revealing a link between the reproductive organs and the brain in medieval medicine.

Both the judgment of medicinal qualities by flavor, odor, and color and knowledge of the general significance and powers of good and bad odors were foundational to the prescriptions of medicines for these purposes. Basic information was available in medical manuals, encyclopedias, and pharmacopeias that discussed the powers of various medicines in detail, including their flavors, odors, colors, qualities, and uses. Texts such as these often included distinct chapters on the qualities and uses of specific spices and good-smelling flowers. The *Pantegni*'s quick overview of odoriferous medicines provides an idea of what information pharmaceutical texts included. There are separate chapters on odoriferous flowers and on spices.⁸³ In the chapter on flowers, Constantine writes that elderflower and basil are hot and dry, so they are useful in dissolving superfluous phlegm and easing headaches caused by something cold. Jasmine is also hot and dry, but it is more powerful than basil or elderflower. Constantine recommends its use in cases of paralysis and epilepsy as well as in phlegmatic (i.e., cold and moist) illnesses of the brain such as phlegmatic migraine. Citrus flower also helps the cold brain, so presumably it has a hot nature. Iris has a diverse nature, like the rose, but it is in general a powerful medicine against phlegmatic illnesses of the brain, signifying that it is mostly hot and dry. Conversely, the rose, as we have seen, is cold and has the power to cool and dry the brain. Myrtle is cold and dry, and it has an astringent and slightly bitter taste. The bitterness gives it a slight amount of heat, which makes it able to dissolve phlegm, so it is good for a hot and humid brain. Violet is cold and humid, which makes it most helpful to a hot and dry brain. It also combats sleeplessness.⁸⁴

Odoriferous flowers, then, have use in tempering the brain when it is unbalanced in various ways. They keep it free of superfluities of phlegm and are particularly useful in illnesses caused by a too-phlegmatic brain, such

as sleeping problems, paralysis, epilepsy, and migraine. Spices have similar powers, but they are stronger, particularly in heat and dryness, which allows their effects to spread to other body parts. Indeed, the *Pantegni* sums up the section on aromatics with the assertion that “every hot and dry aromatic strengthens the heart, stomach, and brain and fills them with its fume.”⁸⁵ For example, musk is one of the stronger aromatics, being hot and dry in the third degree. Constantine’s translation asserts that musk strengthens the heart and other members when they are weak from coldness. Used with saffron, musk can treat paralysis by strengthening the brain. Ambergris works similarly to musk. Cloves are hot and dry in the second degree, lending them the powers to help a cold, weak brain or a melancholic brain. Cloves also generally strengthen the heart and soul. Spikenard and costus are both hot and dry, but Constantine prescribes spikenard for a cold stomach or liver, as a diuretic, and for provoking menstruation, while he suggests using costus to strengthen weaknesses of the nerves and to counter venom. Aloeswood has a diverse nature, but in general it is hot and dry. It has the ability to heal the brain and stomach when they are too humid. It also generally strengthens the weaknesses of the heart, soul, and all other organs, which suggests that it is particularly helpful to the spirits. Not all aromatics are hot and dry, however. Sandalwood is cold in the third degree and therefore cooling to hot brains and useful in easing headaches caused by heat. Likewise, camphor is cold and dry in the third degree. It has the effect of cooling a hot, dry brain and strengthening the heart and soul when they are too hot. Finally, mace is a moderate spice, between hot and cold. It is used to treat a cold stomach and a sickness that causes diarrhea called *lienteria*, which may have been dysentery.⁸⁶

While the *Pantegni* reviews only a small selection of odoriferous medicines, it is clear that the text attributes to odors powers to strengthen the heart and spirits, to ease the stomach, and to heal various infirmities of the brain ranging from imbalance to headache to serious illnesses such as paralysis. In addition to these cures, which rely mostly on the hot, fumous nature of odor, medieval doctors sometimes made idiosyncratic uses of odoriferous medicines. For example, Luke Demaitre cites an example of odor being used to draw worms out of the ear canal: Gilbert the Englishman’s medical manual gives

instructions to “take a fragrant apple that is fully ripe, to warm it near a fire so that it smells sweeter, and apply it to the opening of the ear at night; in the morning, you will find the worm in the center of the apple because of the delight of the smell.”⁸⁷

However, when odor was the point of a medicine, it was most often because of the specific effects of the fumous odor. Odor was particularly often prescribed to treat headache and other illnesses related to the head and the brain. Odorous fume or vapor often had an effect on the brain, either good

or bad. If the brain was imbalanced, odor was an easy way to correct the problem.

One of the most common problems and uses associated with odors was headache. Among the many causes of headaches enumerated by Avicenna were both hot and cold aromatics.⁸⁸ European medical manuals, drawing from and elaborating on Arabic texts and Galen, maintained that aromatics often caused both headache and rheum, which was a serious cold rather than merely a runny nose.⁸⁹ Doctors also made extensive use of aromatics in the curing or easing of headaches, basing their prescriptions on the cause of the headache. For example, the fourteenth-century Anglo-Norman *Euperiston*, in addition to advising the patient not to drink too much wine, prescribes rubbing the head and the nostrils with good-smelling oils, both simple and mixed, for nearly every type of headache. Roses, chamomile, camphor, violets, musk, and sandalwood feature prominently in the cures. Headaches caused by heat are cured with rose oil. The cold aromas of camphor and sandalwood ease headaches induced by hot odors such as that of musk. On the other hand, headaches triggered by cold odors, such as that of camphor, are treated with musk and ambergris. When the wind goes into the brain through the ears or nostrils to create a headache, the pain is treated with a mixture of oils including chamomile, rose, and dill. Headaches induced by bad fumes, such as those of sulfur, are treated with cold medicines: rose, violet, water lily, camphor, and sandalwood.⁹⁰

Since odors went directly to the brain, they were also used to cure other sicknesses of the head. As Constantine's overview of the uses of odoriferous medicines reveals, odors could treat such illnesses of the brain as sleeplessness, epilepsy, and paralysis. Indeed, among Avicenna's eight causes of illnesses in the head were vapors and superfluities.⁹¹ Since its nature was vaporous, the sense of smell could treat or cause both of these problems. For example, Constantine says that violets, which are cold and humid, aid sleep.⁹² According to Avicenna, sleep is caused by excess coldness or humidity in the brain, while wakefulness is caused by dryness.⁹³ Thus, violets are a good cure for sleeplessness because they make the brain colder and more humid.

Because of their abilities to heat and dry the brain, aromatic odors feature prominently in cures for lethargy and other problems caused by an excessively cold or humid brain.⁹⁴ *Lethargia*, a variety of unnatural sleep caused by a phlegmatic abscess in the ventricles of the brain, can be induced by things that generate phlegmatic (cold and moist) humor that vaporizes and putrefies. It can be induced by drinking too much, eating onions, consuming a lot of fruit, and generally having an overfilled stomach.⁹⁵ Avicenna recommends a variety of treatments aimed at purging excess phlegm, some of which incorporate aromatics.⁹⁶ The *Rosa anglica* of John of Gaddesden recommends active attempts to wake a person in unnatural sleep, including rubbing the hands and feet vigorously and putting burnt human hair to the nostrils, the latter of which will wake a person who is lethargic.⁹⁷ He also suggests treating diagnosed lethargy with burnt deer horn and galbanum, which is an aromatic

resin.⁹⁸ Bartholomew the Englishman, citing Constantine, explains that burnt wool or horn wakes lethargics, because

the spirits, abhorring the stench, flee towards the interior of the brain where the cause of the sickness is. From this movement of the spirits, nature is helped against illness, and therefore it more easily distributes and dissolves the matter of abscesses, which are the cause of false tiredness and sleep.⁹⁹

The reason that doctors might apply bad odors to the nostrils of a lethargic was to cause the brain's spirits to draw more deeply into the brain. The concentration of spirits at the site of the illness allowed the body to heal the sick brain more quickly. The odor itself was not a cure; rather, it stimulated the body to heal itself.

Melancholy is another illness of the brain that is treated with aromatics. Included in Avicenna's list of causes of *melancholia*, a mutation of the estimative and cogitative faculties in the brain that creates fear, is shadowy vapor, *vapor tenebrosus*, that rises to the head from outside or inside the body (such as from the intestines) and imbalances the brain. It might also be caused by such things as a general bad complexion or mutation of the brain's faculties as a complication of epilepsy, *epilepsia*, which is a sickness that prevents the movement and operation of the senses and causes spasms because of a blockage in the anterior ventricle of the brain.¹⁰⁰ In addition to bad odor being a possible cause of melancholy, olfaction is a tool for diagnosing the illness: Bartholomew the Englishman asserts that melancholics appreciate fetid odors and avoid aromatic ones, probably because of the mutation in their faculty of judgment.¹⁰¹ Avicenna prescribes pleasing the soul to cure it, including rest in a temperate location with humid, odoriferous air. Odoriferous things should also be scattered around the melancholic's environment because "it is universally necessary [for melancholics] to always smell good odors and flowers of good odor."¹⁰² Thus, Avicenna advises treating the cold, dry brain with hot aromatics and humid air.

Aromatics were the most common medicaments for illnesses of the head, but sometimes the medicines that treated such problems were fetid, as with lethargy. As part of his examination of stench, Bartholomew explains that stench can sometimes cure illnesses. Stinking medicines such as aloe, horse dung, sulfur, and asafetida

attract putrid humors, or those disposed towards putrefaction and stench, with their heaviness of odor because of the similarity among them. Having drawn out the putrid humors, the medicines expel them. This occurs because nature, abhorring the stench of the fetid medicine, is irritated against it, and therefore it gathers itself wholly to fight against what is harmful to it. Thus, stench—that is, stinking medicine—is

occasionally expulsive of stench, and while one fetid thing is taken up, the other fetid thing is removed with it.¹⁰³

Stenches are usually dangerous to the brain because they can unbalance the complexion of the body and spirits and because the spirits flee from them. As part of a medicine, however, they have the effect of irritating the spirits in the brain and other parts of the body so that they gather up everything that stinks—that is, both the medicine and the putrefied humors causing an illness—and expel it.

The spirits of the brain could be manipulated with good and bad odors. The same theory was applied to the uterus, which was a similarly cold member and responded similarly to odors. For example, Bartholomew explains that if the uterus moves too far up in the body because of unruly spirits, it can be treated with both good odor and stench. The spirits flee the stench in the nostrils, drawing the uterus down. The spirits are further encouraged to move down by the application of good odors to the vagina.¹⁰⁴ Managing the health of the uterus with odor is a treatment that began in the early Hippocratic tradition and continued through Arabic works into medieval texts. The most well-known source is the *Trotula*, a collection of texts on treating women's illnesses by several anonymous authors, one of whom may have been a female medical practitioner. The origins of the text are murky, but the most common form, which included a core of twelfth-century Salernitan texts, was arrived at by the mid-thirteenth century.¹⁰⁵ The *Trotula* was a key resource on women's medicine in the later Middle Ages. It was translated into vernacular languages twenty-two times by the fifteenth century and was printed in several editions in the sixteenth.¹⁰⁶

The condition described by Bartholomew is suffocation of the uterus. It had a variety of symptoms, but some of those listed in the *Trotula* are coldness of the heart, weak pulse, loss of voice, and contortions in the body similar to an epileptic seizure. Sometimes, the patient seemed dead because of the loss of pulse and voice.¹⁰⁷ While Hippocratic medicine, as well as common medieval belief, held that the womb physically moved up and crowded the other organs to cause literal suffocation, Galen, the Arabic authors, and many medieval doctors did not believe that the uterus was capable of moving around the body, or at least they did not admit that it was capable of moving much.¹⁰⁸ Galen thought that the uterus could appear to have moved because of swelling, but he maintained that the illness was caused by corrupted female semen or menses harming other organs rather than actual movement. The *Viaticum*, another of Constantine's translations, written by Ibn al-Jazzār (895–979), further explains that the putrefied semen or menses generated a harmful fume that, rising to the upper organs, constricted the diaphragm and the throat, cutting off the voice.¹⁰⁹ The *Viaticum* is a source of one of the texts in the *Trotula* and reflects the beliefs of most medieval doctors. The idea of the wandering womb persisted in popular belief, however. Monica Green notes that the early fourteenth-century anatomist Mundino de' Luzzi reported

that “it is *women* who say that they ‘have their womb in their stomach’ or in their throat or at their heart.”¹¹⁰ Bartholomew’s brief discussion of the ailment in his popular encyclopedia suggests that he also believed the uterus moves, although he attributed the cure to the spirits being moved by stench and pulling the uterus along with them.

Hippocratic and Galenic-Arabic medicine agreed that the root cause of uterine suffocation was too little sexual intercourse. Therefore, the women who most often suffered from it were widows and virgins. The simplest cure for the condition was marriage for single women and sex for married women. However, women who had taken vows of chastity or could not or did not wish to marry for some other reason still required treatment of the symptoms, which were immediately caused by corrupted female semen or menses generating a harmful fume. The *Trotula* explains that “from this superabundant and corrupt semen, a certain cold fumosity is released and it ascends to the organs” near the heart and lungs that control the voice.¹¹¹ The bad fume infected the spirits of the body, which led to the symptoms. As we have seen, the best countermeasure for bad fume was good fume. Suffocation of the uterus was treated exactly in this fashion.

In cases of uterine suffocation, the *Trotula* advises applying substances, not of a fetid odor, but of a heavy odor, *gravis odoris*, to the nostrils. A completely fetid odor may have been too dangerously repulsive to the body’s spirits. The medicaments of heavy odor that the text recommends include galbanum, opoponax, castoreum, pitch, burnt wool, burnt linen cloth, and burnt leather. The physician should rub the patient’s genitals inside and out with oils hot in quality that have an aromatic odor, *odoris aromatici*, such as iris, chamomile, musk, and nard.¹¹² In contrast to the heavy odor at the nostrils, which is less stinking than some other odors, some of the aromatic oils prescribed for the genitals are on the intense side of hot and dry aromatics. Intense aromatics were used because the problem was caused by excessively cold, humid, and putrefied humors. For example, the *Pantegni* had advised that musk was particularly good for strengthening the cold heart, and that is one of the conditions that requires treatment in suffocation of the uterus. It is important to note that the patient was given other medicines to drink or apply to the body in addition to treatment with odors.¹¹³ However, odors played an important role in curing the condition. The bad odor at the nostrils caused the spirits to flee downward while the good odor at the vagina simultaneously attracted them. Following Bartholomew’s logic, the stinking medicine should incite the body to expel the stench of the corrupt semen along with the stench of the medicine. Whether the doctor and patient believed that the uterus itself moved or that the spirits expelled the dangerous fume, the physical treatment was the same.

The reverse of this process was followed in the case of a prolapsed uterus, which the *Trotula* asserts could happen after childbirth or because of cold (perhaps from wind entering the vagina or from a cold bath) weakening the muscles that hold the womb in place and increasing the cold humors within it.

If the uterus has not completely fallen out of the body, the text recommends applying strong aromatics such as balsam, musk, ambergris, and spikenard to the nose and fumigating below with stinking things, *rebus fetentibus*, such as burnt linen. If the womb has come out entirely, aromatics are rubbed on the belly and the woman drinks a potion made of rue, castoreum, and mugwort. The next step is manually pushing the womb back into the body and making the patient sit in a fragrant, and probably rather sour and bitter, bath “in which have been cooked pomegranate, roses, rind of pomegranate, oak apples, sumac, myrtleberries, the fruit and leaves and bark of oak, and juniper nuts, and lentils.”¹¹⁴

As with many medieval medicaments, cures for women's illnesses were often either aromatic or fetid. The vagina was often treated with fumigation, for which purpose pots and stools were designed, as depicted by the illustrations in a fifteenth-century Dutch translation of the *Trotula*.¹¹⁵ Part of the *Trotula* recommends fumigation with cold herbs such as marsh mallows, violets, and roses if the woman has a hot complexion and fumigation with hot spices such as cloves, spikenard, storax, and nutmeg if she has a cold complexion.¹¹⁶ In addition to fumigation, medicines were often rubbed onto the genitalia and the belly. For example, the *Trotula* prescribes rubbing good-smelling oils, in this case from cold violets and roses, on the vagina and the whole lower body during difficult childbirth.¹¹⁷ Medicines were also applied using pessaries, which were, as Green explains, “tamponlike wads of cotton or some other material into which medications were wrapped or poured.”¹¹⁸ For example, a woman suffering from a cold complexion might be treated with a pessary of pennyroyal, laurel leaves, and willow weed before fumigation.¹¹⁹

There seems to have been a particular connection between the head and the uterus. Like the brain, which was the most strongly affected by fumes of all the organs and members, the uterus was cold in quality. Indeed, the *Trotula* explains that “because the womb is tied to the brain by nerves, it is necessary that the brain suffers with the womb.”¹²⁰ Because of the connection between the brain and uterus, if the uterus is too humid, then the eyes water, and if menses are retained, then the corruption gives the patient *alienatio*, which Green translates as “mental distress,” presumably caused by rising vapors.¹²¹ Likewise, in the case of a woman who cannot conceive because of excess humidity, the doctor will know the treatment is finished because, after an odoriferous material such as musk oil has been put into her vagina, “if she has been well purged, she will sense the odor [of the musk] in her mouth and if anyone should kiss her, he will think that she is holding musk in her mouth.”¹²² In another case, the text prescribes a pessary for prolapse of the vagina after birth and adds that the nostrils should also be treated with certain powders “lest they become swollen.”¹²³ Although the text does not explain it, the nostrils must become swollen because of the connection between the head and the genitalia.

The *Trotula* was not the only source of information for women's medicine in medieval Europe. For example, Gilbert the Englishman's *Compendium*

medicinae recommends fumigation not only for suffocation of the uterus but also to test whether a woman is a virgin. If the odor of the substance used is perceived at the nose and mouth, she is not a virgin.¹²⁴ Gilbert could have gleaned the treatment for uterine suffocation from the *Trotula*. However, most Arabic and European medical texts gave similar information. Avicenna's *Canon*, which was not one of the sources used by the *Trotula*, describes suffocation of the uterus as a condition similar to epilepsy and syncope (fainting) found especially in virgins and widows. It is not caused by movement of the organ but, mostly commonly, by retention of the menses or sperm. The retained matter rots in the manner of cold putrefaction, since the menses or sperm are cold and coarse matter. The putrefied matter produces poisonous vapors that go towards the main organs of the body and produce symptoms such as fainting and seizures.¹²⁵ Avicenna also prescribes a test in order to determine whether a woman is sterile: fumigate the uterus with aromatics and if the smell of the aromatics penetrates all the way up to her nostrils, then she is not sterile. If the odor does not travel to the nostrils, it is a sign that bad humors are in the way. Another test is to put garlic inside the vagina and see if the odor and flavor come into the patient's nose and mouth.¹²⁶ Fumigation with aromatics likewise plays a large role in Avicenna's curing of sterility.¹²⁷ Both fumigation and the garlic test can also determine whether the patient is pregnant. If she is pregnant, the odors and flavors will not be sensed in the mouth and nose.¹²⁸

While symptoms of corrupted semen were most common in women, Avicenna reports that lack of sexual intercourse could have the same effect on men:

Sex opposes melancholy and many [other] black bile sicknesses, because it causes dilation and because it expels the fume of aggregated sperm from a part of the brain and the heart ... In most men whose complexion requires sex, when they abandon it, the body is cooled, as are the dispositions other than that for sex. The appetite for food also declines [because food generates sperm], so that it is not received and is [instead] expelled through vomit. In all men who have a fumous vapor in their bodies, sex alleviates it and opposes it, and it is removed from them so that there is no fear of harm from suffocation [*coarctationis*] by the fumous vapor. Sometimes, when a man suffers from a lack of sexual intercourse and an abundance of sperm that has become cold and changes into poison, the sperm is sent to the heart and bad, poisonous vapor goes to the brain, just as happens to women in uterine suffocation [*coarctatione*] ... and until the poison is dispersed, their bodies are heavy, cold, and difficult to move.¹²⁹

Unused male sperm, just like unused female sperm, corrupts, cools excessively (when it should be naturally hot), and produces poisonous vapor that damages the heart and the brain in the same way as in women suffering from uterine suffocation. Avicenna offers no cure for this condition other than sex,

perhaps because men had fewer restrictions on when and with whom they could seek this treatment. Constantine's translation of Haly Abbas similarly notes that, without an opportunity to expel sperm, which is another of the body's superfluities, men can experience muscular spasm in the groin and harmful fumes might ascend to the brain. He does not, however, explicitly liken the condition to suffocation of the uterus.¹³⁰ Among medieval European authors, Gilbert the Englishman argues that melancholy can be caused by corrupt sperm in men or corrupt menstrual blood in women, which suggests that both male and female suffocation were linked with melancholy in medieval Europe, likely from Avicenna's assertion that lack of sex causes melancholic illnesses.¹³¹ Gilbert also recommends sexual intercourse in the treatment of melancholy to help purge melancholic fumes.¹³²

Probably the strongest link between the male sexual organs and odor in medieval Europe was the castrating power attributed to the odor of camphor. The idea is encapsulated in a verse that Demaitre argues is probably of Salernitan origin, *camphora per nares castrat odore mares*, which might be translated as "camphor castrates men through the nostrils with its odor."¹³³ Avicenna notes that camphor represses sexual powers (and that it induces gray hair), so he or another Arab author was probably the source of the idea.¹³⁴ However, the fact that this power of camphor was turned into Latin verse highlights its importance to medieval Europe. It also occurs early: the verse is found in the *Prose Salernitan Questions* twice in explanations of how camphor cools desire and slows all the powers of the body. It is camphor's cold and dry qualities that disrupt the normal functioning of the brain. The *Questions* explain that sexual desire requires matter, heat, and spirit. The cold and dry odor of camphor diminishes both matter and heat in the brain and thereby renders it unable to create the hot, moist vapors (spirit) that cause desire.¹³⁵ The same explanation serves to demonstrate why camphor hinders the other spirits of the body. The spirits are much like good odors in that they require natural heat to stimulate their movement. Camphor cools heat and congeals humors so that they cannot move throughout the body as they should.¹³⁶

The idea of camphor causing impotence is found in later texts as well. Peter of Spain mentions it in his commentary on Isaac's *Liber dietarum universalium*.¹³⁷ In *Rosa anglica*, John of Gaddesden cites it as a cause of male sterility.¹³⁸ Gilbert the Englishman cautions women against holding camphor in their mouths to disguise bad breath "lest men lose the desire for sex."¹³⁹ Camphor, along with other cold aromatics and flowers, is also included in his treatments for conditions such as *satyriasis*, "immoderate erection of the penis" caused by coarse, hot fumes descending to the penis and testicles, sometimes causing pain.¹⁴⁰ However, rather than applying camphor to the nostrils, it was usually mixed into drinks or made into ointments that were applied directly to the penis. Camphor's effect of chemical castration remained in European medical texts at least into the seventeenth century, when the Dutch physician Ijsbrand van Diemerbroeck recounted stories of camphor working

in this way, including its addition to ale by monks in order to help them maintain their vows of chastity.¹⁴¹

Nearly all medicines prescribed by medieval doctors carried some sort of odor since flowers, herbs, spices, and food were major components of most treatments. However, it would be a mistake to dismiss the odor of medicines because of its omnipresence. Although the odor of the medicine was not always its most useful quality, it always made the medicine more effective, since the body's spirits received medicines of good odor more quickly than stinking or odorless medicine. Odor was also frequently a medicine in itself because its nature as a vapor or fume made it more effective than anything else in manipulating the similarly natured spirits. Through its power over the spirits, odor was strongly linked to the health of the brain and other organs, especially the reproductive organs.

Conclusion

Through the information they found in Greek and Arabic sources, medieval scholars and medical practitioners identified, outlined, and justified a logical reasoning for the various functions of odor. Odor worked through its fumous or vaporous nature. In the human body, the abilities of the sense object of olfaction depended on the similarity of odor to the nature of the animal spirits and the general pleasure or displeasure the soul found in good and bad odors. Likewise, the similarity between odors and flavors provided a path for judging the qualities of medicines and other substances, such as bodily fluids, without tasting them. It also is the foundation of the nourishing abilities of odors: good odors certainly fed the spirits and might even keep the body alive as well. With these basic theories of the uses and powers of odor, most of which are concisely explained in general overviews of the senses, a medical practitioner could diagnose a condition, prescribe medicine that affected the body appropriately, and substitute cheaper or more readily available medicaments for expensive or rare ones. Furthermore, these ideas were not limited to the Latin-literate, scholastic world. In the late Middle Ages, facets of scholastic theories of the uses and abilities of odors became general knowledge.

Notes

- 1 Guy de Chauliac, *Inventarium*, VII.1.4, 420–21.
- 2 The origin of identifying the qualities of simple medicines by flavor, odor, and color is Galen's *De simplicibus medicinis*. Gerard of Cremona translated books one through five from Arabic in the twelfth century, and Niccolò da Reggio translated it from Greek in the fourteenth. However, Michael McVaugh notes that although certain texts of Galen, including *De simplicibus medicinis*, were available by the twelfth century, scholars did not deal with more than the *Articella* until the end of the thirteenth century, perhaps because of the difficulty of Galen's texts. As we saw in Chapter 2,

the medieval understanding of smell developed before Galenic texts came into wide use. Even in the fourteenth and fifteenth centuries, Galen is not often cited as an authority on smell. When he is mentioned, it is often in a paraphrase of an Arabic source that cited him by name. In sixteenth-century texts, Galen is more frequently cited, but the traditional Arabic authorities are still cited as well. Cf. Costeo and Mongio's annotations to Avicenna's *Canon*. Since Arabic texts were the foundations of scholastic understanding of the sense of smell, the power to judge medicine also became part of basic European smell theory before *De simplicibus medicina* came into common use. Michael R. McVaugh, "Niccolò da Reggio's Translations of Galen and their Reception in France," *Early Science and Medicine* 11, no. 3 (2006): 275–76; Galen, *De simplicium medicamentorum*, bk. 4, in *Claudii Galeni Opera Omnia*, Vol. 11, ed. K.G. Kühn (Leipzig: C. Knobloch, 1826), 619–703.

- 3 *[N]on est possibile ut sapes dulcis et amarus, et acutus sint, nisi in substantia calida: neque ponticus stypticus, et acetosus, nisi in substantia frigida. Et similiter odores boni acuti non sint, nisi in substantia calida: et colores albi in corporibus congelatis in quibus est humiditas, non sint, nisi in substantia frigida: et in corporibus, in quibus est siccitas et pulverizatio non sint nisi in substantia calida: et nigri in utrisque rebus sunt e contrario. Frigus enim albificat humidam substantiam, et denigrat siccam: et calor denigrat humidam, et albificat siccam. And hoc quidem verum est et necessarium: veruntamen hic est causa alia: propter quam significationes istae quandoque diversificantur: et proprie in odore, et calore, et proprie in colore suo.* Avicenna, *Canon*, II.1.3, 1:247–48.
- 4 Ibid., 1:248.
- 5 Ibid., 1:250–51.
- 6 *[E]st invenire plurima quae nunquam gustavit homo propter fetiditatem eorum ut est sterquilinia et alia fetidi odoris: quae norunt tamen homines cuius nature sunt ex odore eorum quare et nolunt degustare ea: propter copiam certificationis que pervenit ex eorum odore ad eos.* Haly Abbas, *Liber regalis*, II.6, 162v–163r.
- 7 *[I]udicium complexionis rerum ex odoribus minime fide esse perpenditur.* Ibid., 163r.
- 8 On the text, see Charles Burnett, "Experimentum and Ratio in the Salernitan *Summa de saporibus et odoribus*." *Micrologus* 40 (2011): 337–58; Charles Burnett, "Sapores sunt octo: The Medieval Latin Terminology for the Eight Flavours." *Micrologus* 10 (2002): 99–112; and Charles Burnett, "The Superiority of Taste," *Journal of the Warburg and Courtauld Institutes* 54 (1991): 230–38.
- 9 Burnett, "Experimentum," 337 n. 1; Burnett, "The Superiority of Taste," 230–31.
- 10 Burnett, "Experimentum," 341–42.
- 11 Ibid., 344.
- 12 *Cum enim videmus rem albam, quia albedo a frigiditate cadit et est filia frigiditatis, frigidam esse iudicimus secundum visum, cum sit naturaliter calida, ut est allium.* Charles Burnett, ed. and trans., *Summa de saporibus et odoribus*, in "Experimentum," by Charles Burnett, 347, 349.
- 13 *[V]isus rerum naturas minime comprehendit.* Ibid., 348, 350.
- 14 Ibid., 347–48, 350.
- 15 *[C]arunculas quasdam in naribus in modum uberum mamillarum dependentes.* Ibid., 353. The language of the sense instrument is more similar to William of Conches's than any single Arabic source. Perhaps the twelfth-century edition of Constantine read differently in the passages on the olfactory sense than the 1515 edition I have used. If it did, it would also explain the question of William's use of the term *carunculae*.

- 16 *[T]otam substantiam rei et omnes proprietates ... ei totaliter admiscetur.* Ibid., 348, 350. The author also asserts that more nerves (six) come to the tongue from the brain than to the olfactory instruments (only one or two), and these nerves lend the sense of taste more power in judging flavors than the sense of smell possesses (Ibid., 348, 350, 352, 354; Burnett, "*Experimentum*," 344). As Burnett notes, information on the numbers of nerves that come to the tongue and the olfactory instruments is found in Constantine's (and therefore also Haly Abbas's) and Isaac's texts. The question of the number of nerves that come to the olfactory sense is a problem that Albertus Magnus also deals with in *De homine*, q. 28, art. 1, 254–57.
- 17 Burnett, "The Superiority of Taste," 230, 234–35.
- 18 For example, for the purposes of diagnosing and examining patients, touch was perhaps the most useful sense.
- 19 Lawn, *PSQ*, vii.
- 20 Ibid., xii.
- 21 *Cum praestantibus calorem et odorem multe particule frigide ex natura ipsius substantie resolvuntur, que simul cerebrum subintrantes vel etiam aerem secundum se disponentes, quoniam sunt (frigide) et pro frigiditate sua tardius consumuntur, cum tamen cerebri cellulam petant, ipsius reprimunt discrasiam.* Ibid., B51, 24.
- 22 Ibid., B52, 24.
- 23 *Ad odorem faciendum tria concurrunt, aptitudo substantie ut non (sit) nimis spissa, quemadmodum in auro et in auripigmento videmus; mediocritas fumi ut non sit nimis subtilis, ne per subtilitatem evanescat antequam odoratus instrumenta afficiat, velut in pipere et cucube et similibus evenit; calor substantiam dissolvens. Cum ergo multa sint res calide et fumum a se emittentes quarum nulle harum trium habeant comitantiam, nullius odoris consequuntur effectum.* Ibid., B53, 25.
- 24 Ibid., B266, 128.
- 25 Ibid., C13, 330.
- 26 *[I]nter vicinos non posset comedi occulta, nam suo odore proderetur.* Ibid., N28, 295–96.
- 27 For example, Avicenna says that the female sperm should smell like palm or jasmine flowers. Avicenna, *Canon*, III.21.1.9, 1:926.
- 28 Avicenna, *Cantica*, pt. 1, tract. 2, in Averroes, *Colliget*, 258r.
- 29 *[E]xtraneus, horribilis.* Ibid., 258v.
- 30 *Omne illud, quod est ultimati foetoris, est ultimatae corruptionis.* Ibid., 258r.
- 31 Averroes, commentary on Avicenna, *Cantica*, I.2, 258r–v.
- 32 Avicenna, *Canon*, I.2.3.2, 1:152.
- 33 Ibid., II.1.3, 1:247–48.
- 34 Guy de Chauliac, *Inventarium*, VII.1.1, 1:399.
- 35 Pedro Gil-Sotres, "Derivation and Revulsion: The Theory and Practice of Medieval Phlebotomy," in García-Ballester et al., *Practical Medicine*, 120–22.
- 36 Linda E. Voigts and Michael R. McVaugh, "A Latin Technical Phlebotomy and its Middle English Translation." *Transactions of the American Philosophical Society* 74, no. 2 (1984): 6, 16–18.
- 37 *Si fetor procedat ab aliquo membro, curetur illud; si ab aliqua passione, curetur etiam illi, ut si fuerint ulcera aut excrescencie pustule aut opilacio, curetur.* Guy de Chauliac, *Inventarium*, VI.2.2.4, 351.
- 38 Christiane Nockels Fabbri notes that pain was treated similarly: the physician preferred to remove the cause of the pain rather than to merely prescribe a palliative,

although remedies intended purely for pain relief existed. Christiane Nockels Fabbri, "Treating Medieval Plague: The Wonderful Virtues of Theriac." *Early Science and Medicine* 12 (2007): 247–83.

- 39 Lawn, *PSQ*, Ba45, 173.
- 40 Gilbert, *Compendium*, bk. 3, 158v–159r.
- 41 Monica Green, ed. and trans., *The Trotula: A Medieval Compendium of Women's Medicine* (Philadelphia: University of Pennsylvania Press, 2001), 186–87.
- 42 *Ibid.*, 184–89.
- 43 *Ibid.*, 148–49; 186–87.
- 44 [*S*]icut ille, qui sentit odorem stercoris bonum et abhorret aromaticum. Avicenna, *Canon*, III.5.1.4, 1:582.
- 45 *Ibid.*
- 46 Bartholomew, *De proprietatibus rerum*, XIX.37, 1163.
- 47 Avicenna, *Canon*, III.5.1.5, 1:582.
- 48 [*C*]aloris naturalis abundatia, humiditatis mediocritas. Valet enim talis calor talem humiditatem a superfluitatibus mundificare, ut apparet in musco. Lawn, *PSQ*, B55, 25.
- 49 Ad fetidum odorem tria occurrunt, aut extranei caloris habundantia, aut naturalis debilitas, aut humiditatis excessus. Verbi gratia, ex debilitate naturalis caloris non potentis superfluitates consumere, unde non consumpte sed remanentes, corruptione generata, odorem faciunt fetidum ut in stercore hominis; aut ex habundantia humoris ut in cicuta, unde sequitur corruptio et odor fetidus; aut ex intensione caloris innaturalis corpus corrumpentis, unde sequitur corruptio vel corruptus odor ut in fetido cadavere apparet. *Ibid.*, B54, 25.
- 50 Bartholomew, *De proprietatibus rerum*, XIX.38, 1166.
- 51 Nam quando calor innaturalis humorum facit ebullitionem causa est putredinis et foetoris, horum nutrimenta corruptam et pessimam putredinem in stomacho generant, ex qua resolvitur pessima fumositas que caput gravat, quando sola corruptio humiditatis est in causa, tunc odor non foetens sed gravis generatur. Et omnia calida talia propter odoris gravitatem mali sunt nutrimenti, minoris tamen sunt nocumenti, quam que foetidae sunt putredinis. *Ibid.*, XIX.39, 1167.
- 52 *Ibid.*, 1167.
- 53 Est etiam foetor spirituum et nervorum infectivus, et ex naturali consistentia innaturalem alterativus, ut patet in leprosis, quorum anhelitus foetidus sanos inficit et corrumpit. *Ibid.*, 1167.
- 54 Bartholomew, *De proprietatibus rerum*, XIX.37, 1165.
- 55 *Ibid.*, XIX.39, 1167.
- 56 Constantine, *Pantegni*, Theory V.104, 24v.
- 57 Lawn, *PSQ*, Ba107, 190–91.
- 58 [*C*]um natura magis delectetur in re odorifera quam in fetida ... cum apponitur naribus, anima propter horribilitatem fetidi odoris avidius et magis plenarie percipit odorem musci quod sibi est delectabilis et amicus. *Ibid.*, Ba107, 191.
- 59 Margaret Tallmadge May, Introduction to *On the Usefulness*, 1:46–49.
- 60 [*A*]romaticitas et dulcedo, hoc enim desiderant olfactiva, et gustativa, et naturalis virtus etiam inclinatur naturaliter ad ipsas. Duarum enim medicinarum aequalium in virtute, dulcior quidem et aromatica magis efficacioris est iuvamenti, propterea quod virtus attractiva membrorum recipit fortius: et spiritus celerius inde nutritur, si potentiam habuerit nutriendi: et ab ea celerius patitur in quantum est medicina: Veruntamen substantia aromaticitatis est substantia vaporosa sive

fumalis: substantia autem dulcedinis est spissa substantia terrestris: et ideo aromatica magis congrua sunt nutrimento spirituum: dulcia vero corporis nutrimento. Avicenna, *De viribus cordis*, I.9, in Avicenna, *Canon*, 2:339.

- 61 Isaac Israeli, *De dietarum universalium*, 39r–v, 41v–42r; Bartholomew, *De proprietatibus rerum*, XIX.42, 1170–73.

- 62 On the other hand, odors are often praised for their *suavitas*, which is also frequently translated as sweetness.

- 63 *[M]inera generationis nutrimenti spirituum.* Avicenna, *De viribus cordis*, I.9, 2:339.

- 64 *Ibid.*, 2:339–40.

- 65 *Quod autem quidam Pictagoricorum dicunt, non est rationabile: nutriri namque dicunt quedam animalia odoribus. Primum quidem enim videmus quoniam oportet cibum esse compositum. Et enim ea nutrita non sunt simplicia, quare et superfluitas fit cibi, aut in ipsis aut extra, sicut in plantis. Amplius vero neque aqua uult ipsa sola nutrire incommixta existens: corporale enim aliquid oportet esse constitutum. Amplius multo minus rationale aerem corpulentum fieri. Cum hiis autem, quoniam omnibus est animalibus locus receptivus cibi, a quo quando cibus ingreditur recipit corpus, odorabilis autem sensitivum in capite, et cum spiritali intrat fumositatem, quare et ad spiratium uadet utique locum. Quod igitur non confert ad nutrimentum odorabile secundum quod odorabile, manifestum. Quod tamen ad sanitatem, et ex sensu et ex dictis manifestum est. Quare quod sapor in nutritio et ad nutrienda, hoc est ad sanitatem odorabile.* Aristotle, *De sensu*, ch. 5, 445a16–445b1.

- 66 Albertus Magnus, *De homine*, q. 29, art. 1, 35:260–61.

- 67 *[A] corde procedunt due substantie: quarum una est calida et sicca: et hec est spiritus, alia est calida et humida: et hec est calor naturalis. Similiter spiritus est substantia calida: odor vero ratione calidatis spiritum confortat: ratione vero substantie subtilis ipsum nutrit.* Peter of Spain, commentary on *De dietarum universalium*, lectio 19, in *Opera Omnia Ysaac* (Lyons: Trot, 1515), 47r.

- 68 Aristotle, *Meteorologica*, I.3, 340b24–29.

- 69 Peter of Spain, commentary on *De dietarum universalium*, lectio 20, 51v.

- 70 *[U]t alimentum sui operans materia: vel metaphorice, ceu agens sui qualitate alterando, et confortando, ad quod nutritio tandem sequitur vera.* Pietro d'Abano, *Conciliator*, 211v–212r.

- 71 The *rete mirabile* is a web of arteries found in some mammals. Galen erroneously thought humans had one at the base of the brain.

- 72 Pietro d'Abano, *Conciliator*, differentia 155, 211v–212r.

- 73 *Ibid.*, 212r.

- 74 *[U]terque enim corpus existit subtile, aereum, de facili alterabile, resolubile, mobile, calidum, et siccum.* *Ibid.*

- 75 *[P]otest nutrire etiam vere, maximeque quod parva nutritione indiget, ut spiritus.* *Ibid.*

- 76 *Duarum medicinarum aequalium in virtute dulcior quidem, et aromatica efficacior est iuvamenti, et propterea virtus membrorum attractiva ipsam recipit fortius, et spiritus inde celerius nutritur, si potentiam habuerit nutriendi, et ab ea celerius patitur, inquantum est medicina.* *Ibid.*

- 77 *[E]t praecepit sibi tunc vas mellis afferri, et in ipso permansit illic quatuor odorando diebus. Alii vero dixerunt, quod praecepit furnum aperiri, et in eo panes decoqui, et ita ex odore panis permansit. Et hoc fortassis est, quod recitat Oribasius in aphorismis Philosophus refertur quidam, qui ad odorem mellis 40 dies vixit, sed puto literam*

corruptam per additionem cifrae figurae quatuor denotantis. Ibid. See also [Pseudo-]Oribasius, *Commentaria in Aphorismos Hippocratis* (Basel, 1535), aphorism 12, 23–24: *Philosophus autem refert, ad odorem mellis quadraginta dies vixisse quemdam.*

- 78 Gregor Reisch, *Natural Philosophy Epitomised: A Translation of Books 8–11 of Gregor Reisch's Philosophical pearl (1503)*, translated and ed. Andrew Cunningham and Sachiko Kusukawa (Burlington: Ashgate, 2010), X.2.18, 198; *[N]onnulli habitatores Indie odore cuiusdam pomi vivere, a quo et divitius sejuncti aemori dicuntur* (Gregor Reisch, *Margarita philosophica* (Freiburg-im-Breisgau, 1503), X.2.18).
- 79 Gabriele Zerbi, *Gerontocomia: On the Care of the Aged*, ch. 17, in Gabriele Zerbi, *Gerontocomia: On the Care of the Aged and Maximianus, Elegies on Old Age and Love*, trans. L.R. Lind (Philadelphia: American Philosophical Society, 1988), 121–22; *Nec minus delectatur humana natura rebus bene olentibus: eisdem enim reparatur quam maxime. Ideo dixere quod odor bonus est anime cibus: quia spiritus vivificat vitamque extendit* (Zerbi, *Gerontocomia* (Rome: Eucarius Silber, 1489), ch. 17, 50r).
- 80 D.S. Margoliouth, ed., “The Book of the Apple, ascribed to Aristotle.” *Journal of the Royal Asiatic Society* (1892): 187–252.
- 81 Zerbi, *Gerontocomia: On the Care of the Aged*, trans. Lind, ch. 17, 122; *Plinius quoque auctor est ad extremos fines Indie ab oriente circa fontem gangis astomorum gentem esse sine ore: alitu tamen viventem et odore quem naribus trahunt, nullum eis cibum, nullumque potum, tamen radicum florumque varios odores silvestrium malorum quae secundum portant longiore itinere ne defit olfactus: graviore paulo odore haud difficulter exanimari* (Zerbi, *Gerontocomia*, ch. 17, 50r).
- 82 John Block Friedman, *The Monstrous Races in Medieval Art and Thought* (Cambridge, MA: Harvard University Press, 1981), 159–62.
- 83 Stephen of Antioch, in the *Liber regalis*, translates the names of the medicines differently than Constantine, particularly the names of flowers. Since Stephen used many names that seem to be transcriptions of the Arabic names, I have not altered Constantine’s translations. However, it is somewhat difficult to identify medieval medicines, even when the names are not transcribed from Arabic.
- 84 Constantine, *Pantegni*, Theory V.103, 24v.
- 85 *[O]mne autem aromaticum calidum et siccum confortat cor atque stomachum et cerebrum: et fumo replet ipsum.* Ibid.
- 86 Ibid.
- 87 Luke Demaitre, *Medieval Medicine: The Art of Healing, from Head to Toe* (Santa Barbara: Praeger, 2013), 180; Gilbert, *Compendium*, bk. 3, 147v: *Unde optimum est ut accipiat pomum aromaticum et sit bene maturum et calefiat ad ignem ut melius redoleat et apponatur auri de nocte, ita tamen quod persubi cauda figitur orificio auri apponatur in craftino inbenies vermem in centro pomi propter delectationem odoris.*
- 88 Avicenna, *Canon*, III.1.2.1, 1:449–59.
- 89 Demaitre, *Medieval Medicine*, 186–87.
- 90 Tony Hunt, ed., *Euperiston*, in *Anglo-Norman Medicine*, Vol. 2 (Rochester, NY: Boydell and Brewer, 1997), 137–38. This section of the *Euperiston* seems to draw on sources such as Avicenna, *De viribus cordis*, II.3–5, 2:357.
- 91 Avicenna, *Canon*, III.1.1.3, 1:430.

108 *The powers of odors*

- 92 Constantine, *Pantegni*, Theory V.5.103, 24v.
- 93 Avicenna, *Canon*, III.1.1.7, 1:435.
- 94 Ibid., III.1.1.29, 1:443–47.
- 95 Avicenna, *Canon*, III.1.3.7, 1:475–76.
- 96 Ibid., III.1.3.9, 1:477.
- 97 John of Gaddesden, *Rosa anglica practica medicine a capite ad pedes* (Pavia: Girardengis and Birreta, 1492), I.15, 10r.
- 98 Ibid., IV.1, 169r.
- 99 *[S]piritus abhorrentes foetorem, fugiunt ad interiora cerebri ubi est causa morbi, ex quorum concursu iuvatur natura contra morbum, et ideo facilius digerit et dissolvit materiam apostematam, quae causa fuit falsae somnolentiae et soporis, ut dicit idem.* Bartholomew, *De proprietatibus rerum*, XIX.39, 1168.
- 100 Avicenna, *Canon*, III.1.4.18, 1:488; III.1.5.8, 1:498.
- 101 Bartholomew, *De proprietatibus rerum*, XIX.37, 1163.
- 102 *[U]niversaliter oportet, ut semper olfaciat odores bonos, et flores boni odoris.* Avicenna, *Canon*, III.1.4.20, 1:490.
- 103 *[O]dor sui gravitate humores putridos sive ad putredinem et foetorem dispositos ratione similitudinis attrahunt, et extractos expellunt, nam natura abhorrens foetorem per medicinae foetidae praesentiam irritatur contra ipsam, et ideo recolligit se totam ut contra suam dimicet inimicam. Foetor itaque, id est, foetida medicina occasionaliter est expulsio foetidorum, et dum unum foetidum assumitur, aliud foetidum pariter cum ipso removetur.* Bartholomew, *De proprietatibus rerum*, XIX.39, 1168.
- 104 *Eodem modo in causa matricis quando nimis elevatur, comprimendo spiritualia et foetida naribus et aromatica partibus inferioribus utiliter adhibentur, nam natura fugiens foetorem, recurrit ad matricem et sentiendo odorem inferius illac tendit, et sic matricem ad locum debitum secum ducit.* Ibid.
- 105 Green, *The Trotula*, xi–xiv.
- 106 Ibid., xi–xii, 21, 62.
- 107 Ibid., 83–85.
- 108 Ibid., 22–26.
- 109 Ibid., 25; Constantine the African, *Viaticum*, bk. 6, ch. 11, in *Opera Omnia Yssac* (Lyons: Trot, 1515), 165r.
- 110 Green, *The Trotula*, 26.
- 111 *Ex hoc semine superhabundante et corrupto quedam fumositas frigida dissolvitur et ascendit ad partes.* Ibid., 84–85.
- 112 Ibid., 84–85.
- 113 E.g., Ibid.
- 114 *[I]n qua cocta sint balaustie, rose, cortices mali granati, galle, sumac, mirtili, glandes et folia et cortex quercus, et nuces cypressi, et lenticula.* Ibid., 86–87.
- 115 Ibid., 31.
- 116 Ibid., 116–17.
- 117 Ibid., 101.
- 118 Ibid., 31.
- 119 Ibid., 116–17.
- 120 *Cum enim matrix cerebro per nervos alligata sit, necesse est ut cerebrum matrixi compatiatur.* Ibid., 114–15.
- 121 Ibid.

- 122 *Et si bene purgata fuerit, sentiet odorem in ore, et si quis eam osculatus esset, crederet eam muscum in ore tenere. Ibid.*
- 123 *[N]e tumescant. Ibid., 144–45.*
- 124 Gilbert, *Compendium*, bk. 7, 297r–v, 300r.
- 125 Avicenna, *Canon*, III.21.2.16, 1:956.
- 126 *Ibid.*, III.21.1.9, 1:926.
- 127 *Ibid.*, III.21.1.10, 1:927–28.
- 128 *Ibid.*, III.21.1.11, 1:929.
- 129 *Et ipse [coitus] quidem confert melancholiae, et pluribus aegritudinibus cholerae nigre propterea quod dilatat, et propterea quod expellit fumum spermatis aggregatum a parte cerebri, et cordis ... Et plurimorum, quorum complexio requirit coitum, quum ipsum dimittunt, infrigidatur corpus, et reliquae dispositiones: et cadit appetitus cibi, ita ut ipsum etiam non recipiat: et expellat cum vomitu. Et omnem, in cuius corpore est vapor fumosus, coitus alleviat ab ipso, et confert ei: et removetur ab eo, quod timet de nocumento coarctationis vaporis fumosi. Et quandoque accidit viro ex dimissione coitus, et abundantia spermatis, et frigore eius, et conversione ipsius ad venenositatem, ut mittat sperma ad cor, et cerebrum vaporem malum venenosum, sicut accidit mulieribus ex coarctatione matricis, ... et antequam spargatur venenositas, sunt gravitas corporis, et frigiditas eius, et difficultas motuum. Avicenna, *Canon*, III.20.1.10, 1:902)*
- 130 Constantine, *Pantegni*, Theory V.107, 25r.
- 131 Gilbert, *Compendium*, bk. 2, 103v.
- 132 *Ibid.*, 104v.
- 133 Demaitre, *Medieval Medicine*, 308.
- 134 Avicenna, *Canon*, II.2.133, 1:291.
- 135 Lawn, *PSQ*, B52, 24–25.
- 136 *Ibid.*, V7, 354–55.
- 137 Peter of Spain, commentary on *De dietarum universalium*, lectio 20, 51r.
- 138 John of Gaddesden, *Rosa anglica*, II.17, 94r.
- 139 *[C]aute tamen utantur camphora ne viris auferant apetitum coeundi. Gilbert, Compendium*, bk. 3, 159r.
- 140 *[I]mmoderata virge erectio. Ibid.*, bk. 7, 287v.
- 141 William Salmon's English translation of Ijsbrand van Diemerbroeck's *Anatome corporis humani* (1672) includes a translation of his *Medical Observations and Cures*, one of which marvels at this power of camphor: "As to the Cure of the Country mans Frigidity, we have observed strange things in the use of this Camphire. The very smell and fume of it drawn through the Nose, being sufficient to extinguish Venereal Ardor, according to the Verse, *Camphora per nares castrat odore mares*. Such is the smell that Camphire yields; That through the Nose the Odour gelds. But I could hardly have believed, that being laid upon the Thighs it should have had this Operation. But I remember my Brother met with the same Accident in the Cure of Mounsieur Edward, who was troubled with old Ulcers in his Thigh; and who having worn a camphorated Plaister for two Months upon his Thigh, found his Venereal faculty quite extinguished, and his Wife full of sad Complaints; who nevertheless by the use of hot Medicaments, a Nourishing hot Dyet, not without his Wives consent, was restored to his pristine Vigor. Now because of these extraordinary Vertues in Camphire, certain Monks in Germany, who were more desirous, then usual, to live a chast Life, hang it up

in the Barrel to steep in Ale, which they usually drink, on purpose to suppress their carnal desires, and to avoid the Temptations of Venus. This occasioned a very pretty Story at Nimeghen of a Carpenter, who being hired to mend the Floor in a certain Monastery in the Territory of Cleves, in Lent-time, when the Monks chiefly Camphire their Ale, and being forced to stay there till he had finished, for three or four Months, drank of their Ale all the time. But when he came home to his Wife, never was a Guest more unwelcome in this World. For not having the least inclination to Venery he was forced to leave his Farm untilld; which impediment was afterwards however removed in a short time by the use of hot things. Nevertheless the Carpenter hated that Monastery ever after, and never would work there any more. Some attribute this Faculty of extinguishing Venus, to the cold and driness of Camphire, but erroneously; For its savor and its aptness to take fire, declare that it is not cold but manifestly hot; and therefore it must be ascrib'd to some occult quality, which is said to be in Agnus Castus, Mint and Rue, all which things are hot, and yet we find by Experience that they extinguish Venery. Sennertus attributes this faculty to the dryness of Camphire. But there are many other things which are endued with the same and a greater dryness, which have no such Anti-venereal vertue; For dryness alone will not make a Man Frigid; Scaliger endeavours by the Example of a Dog, to shew that Camphire does not extinguish Venery, but erroneously; Since the constitution of a Man is different from that of a Dog, and therefore because the operation is not in both the same, it does not follow that we should make conclusions against known experience." Ijsbrand van Diemberbroeck, *The Anatomy of Human Bodies*, Observation 32, 79–80.

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4 Beware fetid air

Scholastic powers of odor in the popular sphere

Scholastic theories of the nature and abilities of odor began to become a part of general medieval culture in the thirteenth century, and by the fourteenth and fifteenth centuries basic theories of smell were firmly established outside of universities. People seeking medical treatment from doctors and surgeons working on scholastic principles would have become familiar with some of the uses of odor in diagnosing, treating, and causing illnesses. It seems unlikely that anyone was treated for uterine suffocation, for example, without grasping something of the purpose of the fumigants and other odors used in treatment. Medical professionals also used their knowledge in the interests of public health, and this type of communication spread information to the broader population more quickly. In particular, physicians explained the cause of epidemic disease as detailed by corrupt air theory to governing authorities in order to preserve public health.¹ Corrupt air theory was nearly indistinguishable, and also indivisible, from the essential powers of smell.

Medical science taught that putrefied fumes arising from something rotting, such as corpses, stagnant water, old fruit and vegetables, or excrement, infected and changed—or corrupted—the complexion of the air so that anyone who breathed it in might suffer from a bad change in complexion that would lead to illness. The air might also be corrupted, on a grander scale, by celestial movements or, on a smaller scale, by the breath of a sick person. While nothing could be done to prevent malign celestial movements, bad air arising from other causes could be managed. Putrefied fumes could be identified by their characteristic stench, because anything rotten carried a bad odor. Absence of odor was a likely sign of lack of corruption in the air, but a good odor in the air was a positive sign of the air's healing qualities. In the simplest terms, then, corrupt air theory taught that bad odor induces illness and good odor protects and heals the body. Governing authorities of cities and kingdoms incorporated corrupt air theory into laws aimed at maintaining cleanliness and public health by removing the sources of stench that might putrefy the air. During times of widespread illness, civic authorities as well as individual householders also made efforts to fill the air with good odors to combat disease. The powers of odor to cure and cause disease quickly became a matter of universal importance when the plague struck Europe in

the mid-fourteenth century. As the corrupt air theory moved outside the scholastic sphere, so too did theories of olfaction.

The nature of odor in fume is the key to understanding medieval attributions of powers to smells. Medieval scholars and doctors understood the logic behind established traditional uses of odors and based their uses of odors on its principles. The belief that odor was both causative and preventative of epidemic disease is well known, even outside of medieval scholarship. Medievalists also know that poisonous air, which was air that had putrefied after contact with corrupt fume or vapor, was one of the causes to which medieval doctors attributed epidemic disease, including the plague. However, a lack of recognition of the virtually identical natures of fume and odor prevents full understanding of medieval discussions both of plague treatments and of measures taken in the practice of urban cleanliness to prevent disease.

For example, in linking the sense of smell to disease and urban sanitation, Dolly Jørgensen explains that

Medicinal tracts from the Middle Ages, particularly those written about plague prevention in Southern Europe, highlight the role of miasmas, but generally, the tracts do not link waste and the smell of waste to the disease. One exception might be the foul smell of dead bodies, which was the subject of pestilence regulation.²

Jørgensen follows the usual practice among both scholars of epidemic disease and scholars of urban sanitation in referring to “miasma,” rather than corrupt air, vapor, or fume as the cause of pestilential disease. In her study of public health in late medieval England, Carole Rawcliffe outlines the basic medieval theories of odors and fumes, primarily as they are laid out by Bartholomew the Englishman, and generally considers complaints about bad smells to indicate corrupt air.³ However, she also refers to miasma throughout her work because it is the standard terminology among modern scholars for what medieval physicians thought to be the cause of epidemic disease.

Modern scholarship links miasma firmly with premodern thought about epidemic disease. However, use of the term “miasma” to describe the corrupt air that caused pestilence obscures the logic of medieval scholars, medical practitioners, and governing authorities when they attributed causes to epidemic disease and implemented preventative measures against this and other diseases. In medieval thought, the fume that caused pestilential illness was a state of matter that always existed and performed many functions in the world. Rather than miasma, medieval Latin sources speak of corrupt, putrefied, infected, or poisonous air, fume, or vapor, or they merely indicate that there is an unhealthy stench. These terms appear in a variety of medical and non-medical genres, such as in scientific texts working from Aristotle’s *Meteorologica*, a text important to clarifying Aristotle’s position on the nature of odor as well as to elucidating the environmental causes of plague and explaining such natural phenomena as the source of the winds. Modern

scholars do not translate the vapor and fume of Aristotle's *Meteorologica* as miasma, but these states of matter are the same as both the fume that, when rotten, corrupts the air and the odor-carrying material that was capable of healing and harming the body. Returning to the medieval usage of terms such as corrupt air, vapor, fume, and stench clarifies the reasons behind the causes of plague and preventative actions against it. It also foregrounds the links between the disciplines of medicine and natural science and between these scholastic endeavors and the preservation of public health. Discussing corrupt air rather than miasma especially reveals the importance of odors and smell in causing and preventing epidemic disease. Stench itself was a putrefied or corrupted fume that was capable of corrupting the air and sickening people and animals. The use of any of the terms for bad air noted above in health- or hygiene-related sources from the thirteenth through the fifteenth century is likely to refer to corrupt air theory. Application of odor to counteract epidemic disease as well as regulations against bad odor in cities cannot be fully understood without understanding that odor itself was considered a fume. The nature of odor is the reason that good odor was able to repel bad fume, especially if it stank, and to heal spirits of the body when they were affected by bad fume. It is also the reason bad smells might cause disease.

Plague scholarship has sometimes argued that medieval and early modern Europe became more practical in responses to plague after the initial outbreak. Scholars argue that physicians and cities began to implement strategies for disease prevention, especially with regard to person-to-person contagion, only once they had gained some experience with epidemic disease. For example, Bryan Grigsby argues that both theologians and doctors initially saw the plague as a sign of the Apocalypse or as a punishment from God for society's sins.⁴ He adds that in the fifteenth and sixteenth centuries these religious responses gave way to "practical and rational methods by which to analyze and protect people from disease," such as the almost purely medical advice to purify the air with fires, use good odors to fight bad, and moderation in eating, drinking, and sleeping.⁵ Similarly, Ann Carmichael and Jo N. Hays have argued that contagion theory developed only in the fourteenth or fifteenth centuries, after the plague made the workings of contagion apparent.⁶ However, the sources do not back up such an evolution of medical thought. Jon Arrizabalaga dismissed it in 1994 when he demonstrated that there was already a concern for plague prevention and an awareness of person-to-person contagion as well as the problem of corrupt air among both physicians and governing authorities during the initial outbreak in 1348.⁷ Rather than operating only on the level of either corrupt air or person-to-person contagion, medieval medical theory held that there were multiple levels of disease transmission. Arrizabalaga argues that

air spread and contagion can no longer be considered as contradictory views of the diffusion of pestilence, but rather as referring to two different

and successive stages of its dissemination, the air being in addition the place where pestilence is first generated.⁸

Medieval scholars and physicians drew this theory of epidemic disease from Arabic sources that had received it from Galen and the Hippocratic tradition, and they communicated it to cities even before the Black Death in order to improve public health.⁹

The basics of scholastic corrupt air theory, including contagion borne on the air over long distances (e.g., city to city) and short ones (person to person), were communicated to the wider populace in terms of odor, because corrupt air theory is identical to scholastic theories of how stench is generated and what they can do to the body. Since corrupt air theory began to be implemented in the thirteenth and early fourteenth centuries in many cities, residents of towns likely started to grasp some aspects of the connections between odor and disease before the arrival of plague in 1348. Regardless of early exposure to the idea, modern scholars agree that knowledge of the causes of pestilence among the general populace of medieval Europe, especially city dwellers, increased exponentially over the course of the second half of the fourteenth century.¹⁰ Therefore, simple olfactory theory was also communicated to popular audiences, at least as far as urban readers and probably farther through oral transmission of knowledge.

Odor and urban cleanliness

Medieval cities began to implement corrupt air theory, including its understanding of the fumous nature of odor, to preserve public health in the second half of the thirteenth century. Air was one of the Galenic six non-naturals, along with sleeping and waking, food and drink, exercise and rest, retention and excretion, and the emotions. Each of the non-naturals affected the health of the body and required balance, but air quality was particularly important because it could damage the health of entire households, towns, or regions if the air was filled with bad fumes or vapors that might cause it to putrefy. For this reason, along with regulating the sale of food and drink that might make purchasers ill if they were stored incorrectly or for too long, medieval towns began to pass and promulgate laws regarding the disposal of waste, especially industrial waste and sewage, by the later thirteenth century. City councils learned about corrupt air theory from medical professionals, who began to be called as expert witnesses in legal cases regarding urban cleanliness around 1300. Councils were also hiring trained medical practitioners to address matters of public health.¹¹ Physicians and other medical practitioners contracted by a city for their expertise communicated their knowledge of corrupt air theory to civic authorities. Arrizabalaga points out that

from 1300 onwards, more and more reports appear from different communities of the [Mediterranean] area which connect an adequate and

clean air with the preservation of collective health and, reciprocally, connect a stinking air—and therefore a putrid one—with the appearance of diseases.¹²

Even before 1300, Pope Gregory IX (r. 1227–41) took an active role in improving the air quality in Rome by passing laws requiring the removal of stench.¹³ By around 1300, then, governing authorities in the Mediterranean region sought out the latest medical theory and applied it to maintain the health of their citizens.

Moreover, while concern for urban cleanliness and public health before the Black Death are often assumed to have been limited to the Mediterranean region, records of city regulations indicate that other parts of Europe also worked from the corrupt air theory to ensure the health of their populations. Agostino Paravicini-Bagliani argues that the papacy's interest in correcting polluted air spread to Frederick II's court through texts such as Adam of Cremona's *De regimine et via itineris et fine peregrinantium* (1227), which was written for the emperor.¹⁴ Additionally, there is a particular wealth of printed records and recent research on English urban cleanliness. Rawcliffe shows that although certain Mediterranean cities were on the cutting edge of public health, regulating the sale of food and disposal of trade waste by the late 1250s, extant sources reveal legislation of urban cleanliness in London by the 1270s. Furthermore, complaints in England about violations of the rules often focused on stench, which may indicate basic awareness of corrupt air theory.¹⁵ Urban legislation against clogging streets and waterways with garbage and regulating stinking businesses likely demonstrates that university scholars and physicians were sharing their knowledge for the health of the community.

Stench was a part of the corrupt air theory because of the fumous nature of odor. As Arrizabalaga points out, “[t]o any Galenist physician the link between stink and putrefaction was as obvious as that between putrefaction and pestilence.”¹⁶ Every rotten thing produced a bad smell. Furthermore, decomposition was unhealthy and could unbalance the humors in healthy things to create illness. Because stench is a putrefied fume, it has the potential to corrupt the air and thereby produce pestilential air. Because of the closeness between bad air and bad odors, when late medieval towns wrote laws against bad air, fumes, vapors, or odors, it is appropriate to assume they were implementing corrupt air theory in each case. The plague certainly increased awareness of the problem of corrupt air among those without medical or civic responsibility, but the concept of removing sources of stench to prevent disease had already begun to be actively applied in European cities before 1348. After 1348, regulations against stench became common in medieval towns across Europe.

Cities used the corrupt air theory as a guideline for many of their public health regulations. Although records contain the actions of city councils and, in extreme cases, rulers such as a king or a pope in handling problems

of waste disposal and air quality, it is important to recognize, as Jørgensen does, that they “most often acted in response to complaints brought before them.”¹⁷ Urban cleanliness and public health required cooperation between city councils and urban residents.¹⁸ If residents had not done their part in maintaining a town and in reporting those who failed to comply, the laws of the governing authorities would have had limited effect. In order to maintain cleanliness and control odor, medieval cities in the twelfth through fifteenth century paved large and small streets, built and maintained public latrines, designated dump sites outside the city for various forms of garbage, tried to ensure clean drinking water from rivers and other water sources, and arranged for regular collection of both animal and human excrement and other refuse.¹⁹ Residents who threw waste into street gutters or failed to maintain the portion of street in front of their homes or businesses were fined or taken to court, most often because one of their neighbors had complained about the filth.²⁰

The cooperative nature of maintaining cleanliness in cities likely helped to teach townspeople of all social and economic levels that stench could create disease. Records of legislation and complaints are concerned with removing the bad odors of dung, trash, kitchen waste, and residues from butchery and other industries.²¹ Both legislation, which would have been publicly proclaimed to townspeople, and complaints reveal that there was at least a basic knowledge of corrupt air theory among city residents, town council members, and anyone involved in government and law enforcement. Complaints about these nuisances often sum up the reason they need to be removed by merely asserting that they stink. However, it was also common to explain that a certain stench was dangerous to health or to refer to poisonous, infected, or corrupt air, vapor, or fume instead of a stench. All of these terms are reflective of the concept of putrefied fume that infects the air and induces disease. The role of odor as a cause of disease in city legislation and complaints against waste build-up is widely acknowledged by modern scholars, but odor’s importance cannot be grasped without an understanding of the link between odor and fume.

Aromatic, helpful fume was only one of three types of fumes, as Isaac’s *Liber dietarum universalium* taught. The other types were fume with a bad smell and odorless fume. Bad fume, whether it had odor or not, was extraordinarily dangerous. In the thirteenth century, Bartholomew the Englishman warned that

if fume that is melancholic or too acute, or that is resolved from poisonous food or drink or from harmful medicine, hastens towards the brain, it aggravates the animal virtue; it generates fear, as in melancholics; it excites frenzy and rage, as in frenetics and drunks; it generates forgetfulness and erysipelas [a skin infection with inflammation], as in lethargics; and it takes away the use of sense and reason, as in epileptics and people with the falling sickness. Fumes inflict these and many other terrible and harmful diseases on the body.²²

Just as good and bad odors had opposite effects on the body, so did good and bad fumes, whether they were odoriferous or not. Helpful odors could treat most of the illnesses Bartholomew specifies, and harmful odors and fumes could cause them. Indeed, scholars and doctors learned that the most basic powers of bad odor were to indicate corruption in the substance from which the odor came and to cause corruption in the human body. Nearly all corruption produced a stench, and stench also produced corruption by unbalancing the humors of a body.

Cities acted in particular to prevent the bad fumes that stinking odors signified. Excrement and butchers' waste were some of the worst offenders in producing bad odors.²³ The problem of disposal of human and animal excrement was one that challenged all medieval cities. Regular collection of such waste for deposit at designated dunghills occurred in many late medieval towns, and the collected manure was sometimes recycled on rural farms.²⁴ Cities also built and maintained public latrines from an early date. For example, London already supplied facilities in the twelfth century, and laws regulating disposal of latrine waste exist from late in that century.²⁵ Archaeological evidence suggests that the arrival of the plague increased the sensitivity of town dwellers to the problem of stinking excrement in England, and it seems unlikely that other regions of Europe did not also increase regulation of latrines and cesspits.²⁶ Many European cities designated rivers, streams, or ditches as dumping sites for latrine waste, which is reflected in place names such as Shitbrook in England and Merderon in France.²⁷ Other arrangements, such as private indoor or outdoor privies, often led to complaints by neighbors. Barcelona blocked up a hole in the wall around the Jewish quarter in 1330 because of a complaint that the stench of the sewage flowing through it from the neighborhood's latrines might cause disease.²⁸ Similar complaints, most often against individuals rather than whole neighborhoods, were common in both England and Italy.²⁹ Some Italian cities, however, still had working Roman sewer systems.³⁰ Animal excrement was somewhat easier to regulate than human waste because the animals could be kept out of a city if other regulations failed to handle the problem. Pigs were banned from the city of York and its suburbs in 1498 because of "the foule corrupcion that cometh of theym."³¹ Pig dung is perhaps the most fetid of all farm animal waste because of the animals' omnivorous diet, which may have led to a belief that they corrupted the air more than other animals, as a mid-fourteenth-century German plague tract argues.³²

Butchery was a particularly malodorous trade because of its waste. It was often carried out in front of butchers' shops, which led to the streets being covered in blood, skin, and entrails that rotted and stank, endangering the health of anyone in the area, especially those who resided near a butcher.³³ To address this problem, Italian cities often designated dump sites outside the city for trade waste, including that of butchers.³⁴ Bologna and Verona began to require disposal of offal outside city walls in 1250, while Ferrara ordered that butcher shops must be near running water and keep a pit for waste collection

to avoid haphazard scattering of offal.³⁵ In London, butchers' waste was often dumped in the Thames. However, there were frequent complaints about the smell from dump sites and places of slaughter. London so often legislated against butchering animals in different parts of the city that by the end of the fourteenth century, no large animals were permitted to be slaughtered within city limits.³⁶ Complaints sometimes explicitly emphasized the dangers of the stench to public health. For example, in 1354, the prior of the hospital of St. John of Jerusalem complained that butchers disposed of their waste at a wharf owned by the hospital and that the "stench arising therefrom was so bad as to be injurious to the health of the inhabitants of the free prison of the Flete and neighbourhood."³⁷ Other cities in England made regulations comparable to London's over the course of the fourteenth and fifteenth centuries in response to the problem of rotting butchers' waste.³⁸

In addition to action taken by civic authorities, Edward III frequently intervened in London and other cities to stop butchers from creating health hazards by dumping their waste within city limits, often in rivers. He seems to have always made a connection between stench and disease when he was obliged to give clean-up orders.³⁹ For example, in January 1339, Edward ordered Oxford to stop the slaughter of large animals within city limits because of the dangerous odors it generated:

To the mayor and bailiffs of Oxford. Order upon sight of these presents, to cause proclamation to be made that no butchers or others shall slaughter large beasts within the walls, and that no burgesses or others shall place dung, filth, or other offal in streets, ways and lanes where there is common passage of men, or permit this to be done, but immediately [after] the proclamation has been made, to cause those by whom such filth has been placed, to clean the ways and lanes and keep them clean, under pain of punishment, because the king has been informed that several great beasts, to wit, oxen, cows, pigs, sheep, calves and such like are daily slaughtered at divers places within the walls, and also that so much filth, dung and other offal is in the streets, ways and lanes within the walls, that the air is so infected by abominable smells that certain of the magnates and others who come to the town and the scholars and burgesses there are often detained by severe sickness and some die.⁴⁰

This complaint may have been driven by the scholars of Oxford, who were certainly aware of the dangers of corrupt fumes arising from putrefying matter of all sorts. However, even if the university was the source of the complaint, it demonstrates a way that ordinary citizens could learn corrupt air theory: someone made a complaint to the king, who ordered the cessation of slaughter within the city of Oxford and mandated general enforcement of cleanliness. These orders were not merely for the benefit of the mayors and bailiffs of Oxford but were required to be read out to all citizens. It is possible that the residents of Oxford were only told to keep the streets clean, but it

seems unlikely that they would not also have been informed of the sicknesses and deaths caused by the state of the city as an extra incentive in keeping the city clean.

Although it is not a topic that is widely discussed by scholars of public health, there are indications that disposal of phlebotomy blood was also commonly regulated before and after the Black Death, because, like the leftovers from butchery, it generated a noxious stench when it rotted. Gil-Sotres found that Barcelona ruled on nuisances involved in the practice of phlebotomy in 1324 and again in 1352. Again, like butchery, phlebotomy was sometimes carried out “in the street in full view of the public,” and the city of Barcelona legislated against that practice, just as butchery in public markets was often ended in other cities in the late Middle Ages.⁴¹ Similarly, both Barcelona and Florence forbade the veterinary bleeding of horses and other beasts of burden in the streets.⁴² Considering the widespread legislation of how, when, and where butchers could practice their trade and dispose of its waste, it seems likely the phlebotomists were similarly regulated in other cities. Indeed, N.J. Ciecieszki argues that prohibitions on doctors using bloodstained bandages in York may have had more to do with the fear of infection by the odor of old blood than religious or cultural taboos against blood itself. She also notes that London barbers were fined if they left containers of blood at windows or otherwise in public view. Like butchers, they were required to dispose of the waste products of their trade privately, probably to prevent harm to passersby from the noxious fumes of the old blood.⁴³ In 1469, Diest in Belgium similarly ruled that barbers were not allowed to leave blood in their windows or pour it in the street.⁴⁴ Furthermore, the town of Sarzana in Italy required barbers to bury phlebotomy blood, just as some towns required burial of butchers’ waste, and Noyon in northern France and Ghent in Belgium required barbers to maintain pits and trenches for the collection and disposal of blood.⁴⁵

The importance of these urban cleanliness measures to public health is nowhere better proven than in the first plague tract, the Catalan-language *Regiment de preservació de pestilència* (1348) written by Jacme d’Agramont to instruct the inhabitants of Lérida—and specifically not physicians—in plague prevention. Among other causes of pestilence, Jacme emphasizes the dangers of a dirty city. A city filled with stinking refuse is at risk of local pestilence, which is a pestilence confined to a particular city, a street, or an individual house. Jacme explains that

to prevent pestilence in a town one must take vigorous steps to avoid the throwing out of entrails and refuse of beasts, or dead beasts near the town. Nor should manure heaps be placed inside the town. Nor must it be permitted that inside the town, in the streets, either in day-time or night-time, any excrement be deposited or thrown out nor must there be kept inside the town skins to be soaked for tanning nor should cattle or other beasts be killed or butchered as has happened. From all such procedures great infection of the air occurs, as in Paris, in Avignon and in Lerida.⁴⁶

Local pestilence is caused by air carrying the putrefaction of malodorous refuse, particularly excrement and butchers' waste. Jacme goes on to note specific examples of the causes of pestilence confined to a street, citing L rida's tripe butchery among other unhealthy streets in the town.⁴⁷ His preventative measures against local pestilence are identical to many regulations for public health found in cities before and after 1348. His brief discussion of these measures in his plague tract suggests that the theories behind such cleaning were not unknown to the inhabitants of medieval Catalonia. As we have seen, Barcelona was already cleaning up sewage and blood in the streets a couple of decades before the plague.

Medieval towns learned, likely from university-educated physicians and scholars, that bad odors were a sign of corruption that could induce illness. In fact, the bad odors themselves were corrupted and capable of unbalancing the body's humors. Cities, city councils, and other governing authorities in the thirteenth and early fourteenth centuries were already passing laws that prevented dangerous stench from developing in roads and waterways and regulating disposal of household and trade waste. As J rgensen argues, cooperation between residents and governing authorities in cities was necessary to enforce and maintain urban cleanliness and public health.⁴⁸ Therefore, it is possible that residents of any city writing public health regulations based on corrupt air theory had some awareness of it through proclamation of the laws and subsequent reminders when a member of the community violated common practice by rigging a latrine to empty into the street or renting an empty lot to butchers for disposal of their waste.⁴⁹ Knowledge of the theory among those without a formal education could only have increased with the arrival of the plague.⁵⁰

Odor and pestilence

With the first outbreak of plague in 1348, doctors and scholars recognized the disease not as something entirely new but as a *pestilencia*, an epidemic disease.⁵¹ Their reading of Arabic medical resources had prepared them to deal with such an illness, even though the specifics of the disease might not have been contained in their textbooks. Medical practitioners and scholars immediately produced texts in Latin for the use of governing authorities and doctors detailing causes, preventative measures, and cures for the pestilence. Although some scholars of the plague have proposed that medieval doctors discovered practical methods of plague prevention and treatment only after the initial outbreak, primary sources indicate that practical responses to the plague, including the burning of purifying fires, the use of pomanders and other smelling herbs, and basic avoidance of person-to-person contagion, were in place from the beginning. Indeed, Shona Kelly Wray has argued that a reading of the sources reveals that the measures of the first plague tracts "were repeated without any significant changes" by later doctors.⁵² The unchanging nature of plague theory within and beyond the Middle Ages

ensured that corrupt air theory, and with it the basics of olfaction, reached a broad audience.

To further knowledge of how to prevent and treat the pestilence, many texts were written and disseminated throughout Europe. A large number were written in or translated into vernacular languages. Indeed, communication of scholastic information in the vernacular began with the first outbreak: although most of the plague tracts of 1348–49 were in Latin, the earliest was written in Catalan for the instruction of the citizens of L rida.⁵³ Furthermore, the well-known *Compendium de epidemia* by the medical faculty of the University of Paris in 1348 was translated into French, in both full-length and abbreviated form, during the first outbreak. Both versions exist in contemporary manuscripts filled with other French-language medical texts. Ott  Gecser notes that, while the long version is in a deluxe manuscript perhaps intended for the king, the shorter version is in a more ordinary style and ends with the explanation that it is shortened and focused on prevention and cure for the sake of laity. He also suggests that it was intended to be read aloud to illiterate listeners.⁵⁴ The same tract was translated into Italian and German in the fourteenth century, which indicates the significance of the Paris medical faculty’s opinions on the plague.⁵⁵

Plague manuals containing vital medical information about how to handle the pestilence were more frequently written in or translated into vernacular languages after 1348. For example, Rawcliffe notes that plague manuals, sometimes abridged, were often translated into English in the fourteenth and fifteenth centuries.⁵⁶ Likewise, there are many German-language plague texts, and a few in French, English, and Italian, among those that Karl Sudhoff edited between 1910 and 1925 in a series of articles on European plague writing in the 150 years after the Black Death.⁵⁷ Given the proliferation of both Latin and vernacular medical texts throughout Europe in the fourteenth and fifteenth centuries, it seems likely that basic medical theories of what caused the plague and what could prevent it became common knowledge within the same time frame.

Word of mouth was probably the most frequent method of learning about causes and cures during plague years. While interactions such as those between patients and doctors leave little trace, urban regulations, which were promulgated orally so that everyone in a town would know the law, do provide evidence of oral communication of medical information. Arrizabalaga points to the communication between civic leaders and university physicians in the Mediterranean region as evidence “of how deeply scholastic thought as developed in the universities had penetrated into Latin Mediterranean civil society.”⁵⁸ Cities within and outside the Mediterranean area had been working on the principles of the corrupt air theory since the thirteenth century. In order to implement the information gleaned from physicians in their towns, civic authorities had to explain new laws and the reasons for them to the populace. Therefore, the concept of dangerous fumes was probably not entirely new to those without a scholastic education in 1348, at least among residents of towns.

The plague increased general knowledge and understanding of corrupt air theory because it was vital to successful disease prevention. Coomans and Geltner argue that the wording of complaints of dirty, stinking conditions in Italian cities in the late fourteenth century suggests that townspeople understood the corrupt air theory.⁵⁹ Likewise, Rawcliffe maintains that the plague increased public awareness of the dangers of corrupt air considerably in England, so that, “[b]y the closing years of the fourteenth century, if not long before, the threat posed by miasmatic air was understood at all but the lowest levels of society.”⁶⁰ Similarly, Kinzelbach found that the language of learned plague tracts was echoed in requests to German city councils from the early sixteenth to the early seventeenth centuries not only by doctors and scholars but by townspeople “such as a journeyman miller, a postmaster, a shoemaker, [and] a tanner.”⁶¹ Although sources do not exist for the towns examined by Kinzelbach to show similar knowledge among medieval townspeople without a university education, translations of plague texts were made in German towns in the fourteenth and fifteenth century and likely communicated medical knowledge to ordinary citizens.⁶² Finally, Gecser argues that the clergy may have taken some initiative in teaching the laity about plague prevention and treatment, because plague tracts were sometimes included in manuscripts containing a variety of texts “useful in the everyday practice of parish priests,” such as sermons and guides on preaching and dying. Through museum catalogues, he located thirty-five such manuscripts (largely in German and Austrian collections) that “were at least *bound together* during the Middle Ages,” in the fourteenth through early sixteenth century.⁶³ While Gecser also found that the plague tracts used by the clergy, especially in translation, emphasized God’s will far more than the medical texts that were their sources, clerical plague tracts are still recognizable as medical tracts and often attributable to a specific Latin text.⁶⁴ The plague, then, spurred the quick and frequent communication of university medical knowledge to the governing elite, civic leaders, and the general public through both textual and oral methods.

The corrupt air theory is identical to theories of olfaction, because both begin with air mixed with fume or vapor breathed into the body. Medieval scholars and physicians write of the plague-causing substance as air, vapor, or fume that is corrupt (*corruptus*), infected (*infectus*), poisonous (*venenosus*), or putrid (*putridus*).⁶⁵ Just as in smelling, pestilential air is either the carrier for a vapor, a fume, or an exhalation of the earth, or it has been changed in substance (i.e., converted from its natural complexion to a harmful one) by a vapor or fume. Both Galen and the authors of Arabic medical texts detail these processes for the production of corrupt air, and medieval plague tracts repeat them. For example, the 1348 report of the Paris medical faculty explains that the air does not putrefy or become corrupted unless it is filled with bad vapors.⁶⁶ The theory was also current in later medieval texts. A tract from 1481 indicates that “the air does not putrefy by itself unless because of mixture with vapors elevated from the earth and water or from other bodies. Neither does water putrefy unless because of mixture of some substance of

the earth.”⁶⁷ The only change necessary to make this explanation describe the generation of odor in air or water rather than pestilence is to replace “putrefy” with “smell” or “have odor.” Like odoriferous air, corrupt air began with the outside influence of vapors.

Furthermore, each of the adjectives describing pestilential air demonstrates that a vapor or fume has moved away from its proper complexion and become something that is itself corrupt, or rotten, and capable of corrupting other things. The adjectives were sometimes stacked to intensify the danger of the substance, as in a late fifteenth-century text that speaks of “horrible, pestiferous, poisonous fume.”⁶⁸ The corruption of vapor that produced pestilence occurred primarily because of excess humidity and secondarily because of the action of unnatural heat on that humidity.⁶⁹ Thus, corrupt, pestilential fume was generated in exactly the same way as a bad odor. The main difference between pestilential air and air carrying less dangerous fumes was that pestilential air was not just imbalanced in its qualities but almost irreversibly corrupted in its substance.⁷⁰ Rather than merely carrying a dangerous odor, corrupt air was rotten itself. However, air, as a simple element, could not putrefy unless it was mixed with rotten fumes, such as the odors of corpses or stagnant water, in large quantities. In this way, bad odors could cause corruption of the substance of air if they were intense enough. In addition, pestilential air could be expected to smell bad since it was rotten, and scholars knew everything rotten to carry a stench.

That the authors of plague tracts knew that olfaction and pestilence theory were similar is clear from the cures they prescribed for the plague, especially the carrying of pomanders and burning of purifying fires. There are, however, still more explicit indications that they considered the physical workings of olfaction when thinking about the plague. For example, as all surveys of the sense of smell argued, the brain itself was protected from bad odors to an extent because they were too coarse and slow-moving to be easily received by the subtle spirits of the brain. The mid-fourteenth-century physician Johannes of Saxony may have been thinking of this objection when he argued in his plague tracts that corrupt air entering the brain through the mouth and nostrils causes little harm because it cannot penetrate the brain very well and does not remain there long. It is only after it enters the heart and moves back to the brain that it causes mental illnesses such as mania, stupefaction, and lethargy.⁷¹ Other authors of plague tracts similarly emphasize that corrupt fume attacks the heart first or along with other major organs such as the lungs, which was an idea they found in Avicenna, Galen, and Constantine. This susceptibility of the heart to corrupt fumes made it necessary to use medicines and aromatics that strengthened it.⁷²

Alternatively, when the Italian doctor Dionysius Colle reflected on the plague of 1348 a couple of years later, he remembered noticing that tanners, latrine cleaners, hospital workers, and others who worked in fetid conditions “seemed almost immune to the pestilence.”⁷³ His reasoning for why workers in fetid occupations kept their health is the same as that given in explanations

of why bad odors were sometimes useful in medicine: “[p]oison conquered poison, protecting [the body] from it and expelling it.”⁷⁴ Medical theory held that bad odors from outside the body were sometimes capable of stimulating that body’s spirits to work harder to expel the stench along with any other disease in the body, thereby protecting against or even curing a disease that was otherwise difficult to avoid or remove.⁷⁵ Colle goes on to recommend smelling the fumes of fetid substances such as gunpowder and asafetida because fetid things were one of the few means of providing sure protection against the pestilence. He also suggests eating, or smelling the smoke of, pine, larch, or fir bark.⁷⁶ While stench as a preventative measure against the plague was not the most common odoriferous medicine, Colle’s recommendation of it demonstrates another facet of olfactory theory that was drawn into plague prevention and treatment that was implemented because both odor and corrupt air came into existence through fume.

Other physicians likewise made recommendations that differed from normal advice using their knowledge of the powers of fume, heat, and moisture within the body. Sieneese doctor Mariano di Ser Jacobi gave a recommendation contrary to usual medical practice in a late fifteenth-century Italian-language plague tract when he advised moderate sexual intercourse during times of plague as strengthening to the heart.⁷⁷ Most other plague manuals urged abstinence from sex, hard labor, and baths because they overheated the body, which could lead to corruption of the body’s humors and illness or to vulnerability to pestilential air. However, Mariano may have been thinking of the dangers of vapors rising from corrupt semen infecting the body and inducing melancholy or uterine suffocation as well as making the body more vulnerable to plague. Similarly, most doctors advised moderation in eating and care in choice of food because too much food and certain types of food, such as fruit and fish, created excess moisture in the body, which might corrupt and cause illness or make one more susceptible to the corrupt fumes of pestilential air. However, a doctor writing c. 1350 in Germany argued that the bodies of rich people who consumed a lot of hot food and fumous (i.e., alcoholic) drinks blocked the entrance of outside fumes because they were already full of fumes, while someone who ate moderately was at risk of illness when exposed to outside fumes.⁷⁸ Medical knowledge stated that foods, especially the rich foods eaten by the wealthy, caused the stomach to release fumes that often affected other body parts. For example, fumes rising from the stomach could cause bad breath. Alcohol was particularly notorious for causing fumes to rise to the head that distorted brain functions such as sensation. Albertus Magnus addressed the problem of food and drink fumes when he discussed man’s sense of smell. He notes that the disruption of the human brain by hot and moist vapors is particularly evident after dinner, especially when drinking wine. The vapors of food and wine are incompatible with the animal spirits, disrupting them so that they can no longer carry information effectively between the cells of the brain. Therefore, hot and moist vapors impair sense perception. He concludes

that “this is why a certain philosopher said that Moors perceive odors well, because they do not drink wine.”⁷⁹ The author of the German plague tract interpreted the same medical beliefs and arrived at the conclusion that food fumes in the body would block other fumes from entering, thereby protecting the body from illness in a similar way to the stench protection Colle advised. Michele Savonarola (1385–c. 1466) seems to have been thinking along the same lines when he explained that cloistered monastics and prisoners are less likely to catch the plague because the air in their habitations becomes thickened or coarse from being enclosed “and therefore it is more difficult for it to become infected.”⁸⁰ As we have seen, smell theory held that the air picked up bad odors, which had a coarse nature, less quickly than good odors with a subtle nature. Here, Savonarola assumes that already-thick air has even more difficulty picking up the coarse fumes of disease. Texts such as these reveal that physicians considered what they had learned about olfaction and the nature of fume when they thought about the corrupt air theory and about the plague. This can only have been because they recognized the similarities between olfaction and corrupt air theory.

Late medieval scholars and physicians drew their knowledge of epidemic disease principally from Arabic medical encyclopedias.⁸¹ These texts included discussions of the qualities of different types of airs, including pestilential air, as an important part of general medical knowledge. Pestilential air is typically spoken of as a terrestrial or environmental cause of epidemic disease. It is in the middle range of disease transmission, between the larger cause of celestial movements and the micro level of infection from individual to individual.⁸² The celestial causes of pestilence are analogous to and compatible with the concept that God willed epidemic disease and sent it to the world using natural means. Celestial causes of disease were little considered in medical writing, because they were beyond the power of a doctor to mitigate directly.⁸³ On the other hand, the person-to-person transmission of disease was a problem that was addressed in ancient, Arabic, and medieval European medical texts. In medieval Europe, awareness of the problem of contagion between individuals led to the quarantine of ill people, of households, and even of entire cities, especially in outbreaks after the initial one.

Thus, the theories of the causes of epidemic disease worked on several levels. Discussion of the stages of plague transmission is common in medieval plague writing. For example, a tract written by the doctor Heinrich Rybinitz in 1371 for the city of Wrocław gives this progression, mostly drawn from Avicenna’s *Canon*, as an explanation of how plague is generated: 1) the alignment of the stars changes the weather patterns; 2) because the sun is no longer hot enough to disperse coarse superfluities contained in the vapors or fumes that rise from water or the earth, these corrupt vapors infect the air; 3) the corrupt air infects people; and 4) infected people can communicate the disease to others. Because changes in weather patterns can cause the generation of harmful fumes, Rybinitz emphasizes that fall is a particularly dangerous season. Pestilential air can, however, be generated without going

through all of these stages, such as when many corpses are left unburied and generate harmful fumes.⁸⁴

The terrestrial level of causation designates corrupt air, vapors, or fumes as the source of disease. At this level, it matters less whether the fumes were generated by the stars or by something locally putrefying. Whatever the cause, physicians knew how to counteract fumes. Indeed, one plague tract considered a focus on the celestial causes of pestilence to be a serious fault in doctors, who should instead focus on the levels of disease transmission that they could treat.⁸⁵ University-educated physicians were aware of the powers of fumes and odors from Arabic medical texts long before the plague. Fume was a state of matter that had important effects on the world and on the human body in particular, including causing epidemic disease. For example, Avicenna adopts a version of Aristotle's twofold air, made of both vapor and fume and containing matter from each of the four elements. Air corrupts in the same way as pond water corrupts, putrefying and becoming pestilential air. The bad air can putrefy the humors that surround the heart and cause a variety of symptoms.⁸⁶ Similarly, the *Pantegni* teaches that when air putrefies or picks up some other bad quality, it becomes pestilential. This mutation of the air might happen because of something in the area causing it, including the fumes from overripe fruit or plants, rotting corpses, or stagnant water. A pestilence among animals might also spread to people. Finally, different seasons of the year might cause changes in the air that could lead to widespread illness. Pestilential air can cause symptoms such as stupor, pain, cold extremities, heat in the heart, dry mouth, stinking breath, excessive worrying, and a weak stomach.⁸⁷ Good air, on the other hand, should be cleansing, finely textured, clear, pure, moderate in temperature, and pleasant in odor. Deviation from these qualities makes the air pestilential.⁸⁸

Fumes, vapors, and terrestrial exhalations could be corrupted by the movements of the stars, principally as the seasons changed and when the weather moved unpredictably between extremes of hot and cold or rainy and dry.⁸⁹ Fall was the most dangerous season because of rising humid vapors from water sources and from ripe vegetables and grains that could not be dissolved because the sun's heat was less intense than in the summer. On the level of terrestrial causes, stagnant water and rotting corpses were repeatedly cited by authors of plague tracts as sources of pestilential fume. Both Galen and the Arabic authors had designated unburied corpses and the vapors of stagnant water as the usual causes of pestilential air. While stagnant water seems to have had a more local effect, the disease dispersed by fumes from corpses could travel a long distance. Avicenna cites Galen's story of a pestilence spreading from a battlefield in Ethiopia that reached Greek territories. The fumes not only caused illness but also damaged the virtue of memory so that sufferers forgot the names of their children and even their own name.⁹⁰ Constantine also cites this illustration, noting that a plague arising "from the corruption of dead Ethiopians" once reached Athens.⁹¹ The problem of malodorous fume arising from corpses emphasized the necessity of burying

the dead quickly and deeply in times of pestilence. Following these examples, medieval authors cited corpses as a cause of the plague.⁹² For example, Jacme d'Agramont cites Galen's story of the Greek plague, adding the locally relevant explanation that the wind can carry pestilential air long distances from cities as well as battlefields:

This is why when there is pestilence in Sicily or in Sardinia, the wind of "midday" is very dangerous to Catalonia, whereas the septentrional or tramontane wind is then most excellent and beneficial. If, on the contrary, the pestilence should be in Gascogne or in Toulouse or in France, the northern wind would then be very dangerous to us.⁹³

Putrefied water was also a concern for medieval authors.⁹⁴ Rybinitz urges the city of Wroclaw that "the stench of water is especially a cause of this pestilence."⁹⁵ He advises the citizens to empty out all natural and man-made sites of standing water, such as wells. If the water is left, it might putrefy and send out vapors that infect the air, from which stinking air humans will contract the plague.⁹⁶ Jacme d'Agramont likewise addresses the problem of corrupt water vapors, noting that universal pestilences of large areas can develop because of water vapors and also that cities surrounded by pools or undrained irrigation ditches are more susceptible to local pestilences.⁹⁷ Rawcliffe quotes Thomas Forestier's late fifteenth-century Middle English plague tract that also emphasizes the dangers of vapors arising from corrupt water within the limited space of towns:

Stinking carrion cast into the water near cities or towns ... and the corruption of privies make the water corrupt, and when meat is boiled in it and drink is made with it, many sicknesses are generated in man's body. The air is also corrupted by the casting of stinking waters and many other foul things into the streets and from keeping stinking waters in houses or in kitchens for a long time. Vapors from these things then rise into the air at night and infect the substance of the air. Because of the corrupt and infected substance of the air, men die suddenly as they walk in the streets or the paths. Let every man that loves God and his neighbor amend these things.⁹⁸

Forestier cites several ways that water could become polluted, including direct contamination by carrion (possibly referring to butchers throwing entrails into rivers) and run-off from latrines as well as the stagnation of water that fermented the trash in the streets or sat too long rotting inside a home. Any putrefying waste water lying in city streets or in homes infected the air with its vapors at night. Corrupted water was dangerous to use in food and drink, and its fumes could cause sudden death to passersby.

Some of Forestier's stinking waters kept in houses and foul things cast into the street were likely the contents of chamber pots. Although it was not

one of the main causes of air-corrupting fumes cited by the Arabic authorities, medieval authors argued that large quantities of dung were a source of pestilence.⁹⁹ Jacme d'Agramont recommended cleaning up cities to prevent local outbreaks just as urban regulations from the thirteenth through fifteenth century ordered, including their focus on dung and the remains of dead animals.¹⁰⁰ Similarly, Johannes of Saxony notes that "not a few places in our regions [Germany and France] are unclean and filled with dung," particularly Strasbourg, which is filled with the strongly smelling fumes of pig dung and cooking waste.¹⁰¹ Johannes asserts that there are so many pigs in the city that "they infect the air at all times."¹⁰² Likewise, a plague tract written for a 1481 pestilence lists dunghills among other air-corrupting substances.¹⁰³

Just as the air, filled with infected fumes, could infect entire regions, so too the breath of a sick person, likewise filled with corrupt vapors, could spread illness. Bartholomew the Englishman asserted that fetid leper breath could infect healthy people, which Rawcliffe notes was a common and growing belief in the later Middle Ages that led doctors to exhort the healthy to avoid the sick during outbreaks of plague, just as lepers were already isolated from the rest of the community.¹⁰⁴ Rybinitz advises against visiting the sick during times of pestilence: "air is freshly corrupted by a fetid thing, that is, by fetid breath, and therefore it is bad to visit the sick in a time of pestilence because of their fetid breath."¹⁰⁵ In a similar vein, a plague tract from the second half of the fifteenth century notes that those with imbalanced complexions, such as people who are frequently angry or who work too much, are the most likely to contract the plague from the air. However, the fumes these people give off are contagious to people with otherwise healthy complexions: "You ask, how is this disease contagious? I say because venomous fumes arise from the bodies of such people, corrupting the air and the humors. That is why it is necessary to flee from those who have been infected."¹⁰⁶ Jacme d'Agramont argues more simply that, while those who already have corrupt humors in their bodies are more susceptible to it, pestilence spreads to healthy people from "contact with those sick of the pestilential malady, because from them it is transferred to others as wild fire." Indeed, he maintains that all diseases that come from pestilential air can be transmitted person-to-person.¹⁰⁷ He also advises doctors to be careful about how often they visit the sick during times of pestilence.¹⁰⁸

Air quality was the main concern during times of pestilence, and good air was identifiable by the absence of stench. A 1481 plague tract explains that "the desired air is that of good substance, in which there is nothing from (previously healthy) sick people nor from putrid vapors elevated from mud or dunghills or swamps and universally from any stinking things whatever."¹⁰⁹ Air might be corrupted by sick people (but not the chronically ill, who were not contagious) and by vapors from the earth, stagnant water, dunghills, or anything of bad odor. Medieval doctors had a cohesive theory of what caused the air to corrupt, and this corrupt air theory was quickly applied by doctors, governing authorities, and individuals to contain the transmission of plague.

For the most part, cities wrote and enforced laws curtailing the causes of the bad odors that were the most reliable signs of corrupt air. In Florence, during the first outbreak, the city tasked a group of eight people with enforcing sanitary regulations, especially “the forcible removal of all ‘putrid matter and infected persons, from which might arise or be induced a corruption of the air.’”¹¹⁰ This removal of objects and persons that might exhale corrupt air addresses both environmental and personal levels of infection. The city of Ragusa (modern Dubrovnik, Croatia), which had strong links with Venice, addressed personal contagion by implementing a month-long quarantine for newcomers to the city during times of plague, starting in 1377.¹¹¹ The Italian city of Pistoia regulated the burial of plague victims in 1348, requiring them to be laid in nailed coffins and buried at least six feet deep.¹¹² Pistoia’s plague regulations also sought to prevent corruption of the city’s food by ordering that butcher shops could not be “near any kind of tavern, shop, stable, or pen that ‘will give off a putrid smell.’”¹¹³ While normally butchers were accused of creating noxious stench, this regulation was aimed at preventing corrupt fumes from contaminating fresh meat. Similarly, a scholar from Milan wrote that bread made in an area suffering from the plague “could absorb corruption from the air and thus transmit plague.”¹¹⁴ The stench itself might corrupt food by touching it.¹¹⁵

Cities in other parts of Europe also responded quickly to the dangers identified by doctors. The chronicler Gilles Li Muisis (c. 1272–1352) reported in 1350 that the Belgian city of Tournai had instituted measures against infection by the dead in 1349. Civic authorities ordered that anyone who died of the plague at any time of day or night be buried immediately in a coffin in a grave that was at least six feet deep, and only one coffin was allowed per grave. The city also required each parish to have three empty graves ready at all times and limited funeral gatherings to the church during the actual burial. Not long after this proclamation, however, the civic authorities banned the invitation of friends and relatives to attend funerals, stipulating that only two people should be present to pray for the soul of the deceased.¹¹⁶ Li Muisis adds that “[f]ew or none died among those who drank wine and who avoided bad air and visiting the sick. But others, who visited or lived among the sick, either became seriously ill or died,” thus communicating his faith in the effectiveness of medical advice soon after the first outbreak.¹¹⁷

Urban areas might also burn strongly scented wood in public areas to purify the air of an entire city, a measure of plague prevention first suggested by Gentile da Foligno in 1348.¹¹⁸ Burning dry woods and spices to purify the air was a universal practice against the plague. Doctors had already advised it during the first outbreak.¹¹⁹ However, the burning of purifying fires was most common inside individual homes. Sudhoff’s plague tracts advise over and over again to burn juniper or oak wood to cleanse the air inside a house. They also frequently recommend adding spices and herbs to those fires as fumigants to rectify the air more quickly.¹²⁰ Writing for the city of Florence in 1382, Francischino de Collignano explained that

it is especially necessary to beware fetid air or air in which a stench or a worse odor exists. Indeed, among things that alter the vital spirit and change it to a bad complexion, nothing is like stench, as Avicenna asserts ... It is of the greatest necessity to rectify the air in the present time of pestilence. Permit no stench to be in it. Use fumigation frequently, and especially in a room where someone sleeps.¹²¹

According to Francischino, corruption of the air is betrayed by its stench. Nothing worsens the complexion of the spirits as quickly as stench, and it should be especially guarded against during times of pestilence.

Rectifying the air in homes was thus a vital step in plague prevention and cure because pestilential air could enter the body not only through normal breathing but even through the pores of the skin and any of the body's other orifices, such as the ears. Because of the vulnerability of the body to air, the plague tracts sometimes advise rinsing the face, mouth, and nose with plague-fighting vinegar in the morning along with burning woods and aromatics in the bedroom.¹²² Jacme d'Agramont advised the preventative measure of sprinkling the floor with cooling vinegar and rosewater in hot times as well as laying down willow leaves, myrtles, roses, and onions as floor cover. Fires were for cold times, in which case he suggested burning dried grapevine roots, rosemary, or juniper. Once the pestilence had arrived, he boosted the medicinal qualities of fires by recommending that fires of rosemary, myrtle, cypress, juniper, or lavender be augmented with fumigations. Great lords should use expensive ingredients such as aloeswood, ambergris, myrrh, storax, sandalwood, and rosewater, while common people could fumigate with frankincense, myrrh, and other cheap herbs and spices.¹²³ He adds, perhaps thinking of the poor, "I will say that the fire alone can effectively rectify air putrid in its substance."¹²⁴ In addition to fire as a preventative measure, the Paris medical faculty urged burning wood and aromatics in the rooms of those who were already sick to amplify the effects of other medicines and prevent family and visitors from catching the disease from the infectious breath of the patient.¹²⁵ The odoriferous materials used in fires sometimes varied depending on the season, with cold aromatics prescribed during hot times and hot ones during winter to fine-tune the correction of the air. The odor of dry woods burned with herbs or aromatics would counter the effects of disease-inducing bad odors, strengthen the spirits of the body, especially in the heart, and correct the complexion of the air. This benefit applied to anyone in a room, a house, or an area of a city that was within range of the smoke of the fire.

Plague tracts also frequently recommend carrying camphor (a cold and dry aromatic to counteract hot and humid pestilential air), pomanders of various compositions, any aromatic, or merely bread or a sponge soaked in vinegar before the nose and mouth when leaving the house to prevent corrupt air from entering the body and to strengthen the heart.¹²⁶ An Italian plague tract from the second half of the fourteenth century advises carrying aromatics

such as sandalwood, rose, saffron, cloves, and camphor “because the heart is especially strengthened through smelling.”¹²⁷ Like the odors of fires, the aromatic or neutral odors of carried substances would protect against pestiferous bad odors and strengthen the spirits of the holder. The composition of pomanders might also vary depending on the season. The Paris masters cite Johannes Mesue (Yūḥannā Ibn Māsawayh, d. 857) in a prescription for a pomander good for burning, fainting, and pestilential fevers that included such ingredients as red and white sandalwood, rosewater, and camphor. All three of these aromatics are cooling and drying, according to the *Pantegni*. The masters recognize the complexion of this pomander by noting that hot aromatics can be added if desired.¹²⁸

Hot aromatics were frequently used in pomanders and other medicines because of their power of augmenting the natural heat of the body, since natural heat and good odors are similar. For example, the Paris medical faculty advised that the king and queen sniff pure ambergris, a very hot and dry substance, because

it has the strong property of pleasing and strengthening at the same time, and it is more powerful [than other aromatics] because of the strength of its aromaticity. Therefore, it is strengthening of any substance of the spirits and the principal members and multiplicative of them.¹²⁹

Ambergris was so strongly aromatic that it provided a powerful boost to the health of the spirits and the principal members, the heart, liver, and brain. Avicenna’s *De viribus cordis*, recently translated by Arnau de Vilanova, similarly emphasized the necessity of aromaticity for the spirits of the heart and may have influenced the Paris masters. Indeed, other plague tracts sometimes cite it as an authority on strengthening the heart.¹³⁰ However, ambergris was extremely expensive, since it is a material that comes from the digestive tracts of whales and was often gathered by combing beaches.¹³¹ Therefore, the masters also suggest a less expensive (but still not cheap) pomander made of a long list of hot and cold spices, including myrrh, frankincense, aloeswood, rosewater, sandalwood, musk, cloves, mace, nard, cinnamon, cardamom, camphor, and a smaller quantity of ambergris.¹³²

As with public health regulations, the promulgation of measures against the plague ensured some awareness of corrupt air theory throughout the entire populace of the city. Medical advice was not limited to the wealthy. Most plague tracts included advice for the poor, indicating that doctors expected the middling and poor citizens of towns to make up some of the audience of their information. At the very least, the authors of tracts expected that their readers would communicate with the less wealthy about what they could do to avoid illness. Indeed, ownership records such as wills and inventories and literary sources indicate that the burning of fires and carrying of pomanders or some other odoriferous material were known and practiced among townspeople.

Records of the ownership or sale of pomanders and other scent holders reveal the use of aromatics against the plague. However, most of these records concern the belongings of nobility and royalty, because the records of the rich are the best preserved and also because the aromatics that made the most effective pomanders (*pommes d'ambre*, “apples” of ambergris) and musk balls were expensive. Woolgar notes that English royalty and aristocrats between the first half of the fourteenth and the beginning of the sixteenth century owned pomanders, but their value and number were low, considering that their owners could have afforded more and flashier jewelry. For example, in 1423 Henry V owned only two musk balls, one gold and the other silver gilt.¹³³ The small number and relatively low cost of the items may indicate that their purpose was primarily medical, for use during times of pestilence rather than for display. In his survey of medieval jewelry, Ronald W. Lightbown notes that in extant descriptions, some pomanders, or, properly, pomander or musk ball holders, were merely openwork cages for the aromatic ball.¹³⁴ Royalty, nobility, and the popes sometimes owned much more expensive and decorative pomanders in gold and silver adorned with rubies, sapphires, diamonds, pearls, and other jewels. However, they owned plainer, more utilitarian pomanders as well. Charles V of France owned six unmounted pomanders in 1380, and Lightbown suggests that his holders were likely to be openwork, except for those given a more detailed description.¹³⁵ Pomanders tended to be very expensive because of their aromatic components if not their cases, but plague tracts included recipes for more affordable concoctions and, by the fifteenth century, jewelers accommodated the non-royal market by producing pomanders in gilt copper.¹³⁶ However, sometimes the gentry owned gold pomanders: the 1487 will of Elizabeth Paston Brown reports that she owned a gold musk ball weighing half an ounce.¹³⁷

Likewise, paternosters, the forerunner of the rosary, often included either metal beads filled with aromatics or the pierced *pommes* themselves, made of materials such as labdanum (an aromatic resin) or ambergris.¹³⁸ Scented paternosters were, like pomanders, used for medical purposes as well as spiritual ones. Lightbown observes that, in 1386, Charles the Bad, King of Navarre, paid his jeweler for twenty-three openwork paternoster beads, which were to be filled with musk on the orders of the royal doctor. Most other records of royal and aristocratic paternosters give no specified purpose for their purchase, but it is likely that they functioned simultaneously to purify the air, to perfume the person, and to enhance devotion. Charles V of France's 1380 inventory included beads filled with musk, and his daughter Marie, who died in 1377 around the age of seven, had possessed gold beads filled with ambergris. The fifteenth-century French aristocracy also lavished money on paternosters of musk and ambergris. As Regent of France at the end of 1431, John, Duke of Bedford ordered a four-ell-long paternoster with beads made of gold, musk, and ambergris. René of Anjou owned a musk paternoster strung on silk and gold thread in 1432. Louis XI also had a musk paternoster in 1469 that was a gift from René of Anjou's wife, possibly the

same piece.¹³⁹ Expensive metals and still more expensive aromatics were out of the reach of most, but since paternosters were so commonly worn by the fourteenth and fifteenth centuries, at least among the residents of towns, it is possible that they may have imitated aristocratic practice by attaching more affordable scented beads to their own prayer beads.

Even if the metal casings for scent balls were too expensive for the average medieval person, plague tracts nearly always provided substitute sniffing materials for the middling and poor residents of towns, and literary sources demonstrate that townspeople must have been aware of medical advice. Boccaccio's *Decameron* (1350–52) describes the use of sniffing herbs by the inhabitants of Florence in 1348. During times of plague, some citizens never left home without

carrying in their hands flowers or fragrant herbs or divers sorts of spices, which they frequently raised to their noses, deeming it an excellent thing thus to comfort the brain with such perfumes, because the air seemed to be everywhere laden and reeking with the stench emitted by the dead and the dying, and the odours of drugs.¹⁴⁰

Boccaccio's description not only demonstrates that he knew the reason for carrying something to smell during times of plague but strongly suggests that the citizens of Florence understood the purpose as well. In particular, his use of the word "comfort," *confortare*, is the same that Latin medical tracts use to describe the strengthening effects of odor on the brain. Wray raised the possibility that Boccaccio drew his information directly from plague tracts rather than reporting what he had seen, in order to make "a strong, moral critique of medical advice presented in the medical literature of 1348–49."¹⁴¹ If that were so, Boccaccio would be repeating the advice of plague tracts as part of his argument that doctors were not compassionate enough and offered advice that permitted them to avoid the sick.¹⁴² Even taking this possibility into account, contemporary readers of his text would not have understood Boccaccio's criticism if they had not been aware of the information in plague tracts. Indeed, Wray demonstrated that the plague tracts must have been widely read and that, contrary to Boccaccio, doctors were active in giving advice to the sick.¹⁴³ Citizens of Florence might have learned of plague remedies from tracts and from doctors as well as from the civic authorities who enforced pestilence regulations.

Those charged with the care of souls communicated some knowledge of the terrestrial causes of plague to the populace as well. The upper ranks of the clergy wrote to each other about the earthly as well as the divine reasons for the plague. For instance, in July 1348, William Zouche, the Archbishop of York, wrote to one of his staff that

There can be no one who does not know, since it is now public knowledge, how great a mortality, pestilence and infection of the air are now

threatening various parts of the world, and especially England; and this is surely caused by the sins of men.¹⁴⁴

Although Zouche considered God the primary cause of the pestilence, God worked through natural means (air infection) to inflict it on the world. Likewise, in August 1348, the Bishop of Bath and Wells, Ralph of Shrewsbury, ordered his archdeacons to organize weekly processions in which the members of each parish should pray for their sins so that God would “turn away from his people this pestilence ... and send healthy air.”¹⁴⁵ These are examples of the clergy communicating within their own circles, but it is easy to imagine a priest who had read this letter exhorting his congregation to plead with God to forgive their sins and send healthy air to end the pestilence.

Plague sermons demonstrate not only clerical knowledge of causes and preventative measures but also awareness of medical advice among the laity, even when the author of a sermon urges the superiority of spiritual medicines. Gecser shows that in the fourteenth and, especially, the fifteenth century, preachers were reading plague tracts, because they were bound together with preaching texts.¹⁴⁶ Although not many medieval plague sermons or references to them being given exist, he suggests that they were simply not recorded by narrative sources, “perhaps because sermons were not as spectacular as processions.”¹⁴⁷ However, there is some evidence that public sermons on the plague took place, sometimes frequently, even though delivering a sermon required gathering a group of people into a confined space in flagrant disregard of medical advice on avoiding contagion.¹⁴⁸ Gecser examines sixteen extant plague sermons from the fifteenth and early sixteenth centuries, some of which he categorizes as “responsive” to plague medicine, giving it a place alongside religion, and some of which are “antagonistic,” denying that Christians should use medicine against the pestilence.¹⁴⁹ Both types of sermons demonstrate the awareness of the preacher and his audience of medical advice. Even sermons that railed against medicine discussed some aspect of medical beliefs about the plague. For example, Thomas Brinton’s sermon disparages the movements of the stars as a cause of plague when God’s will is far more important, while Bernardino da Feltre attacks preventative measures and cures.¹⁵⁰ Bernardino summarizes most of the medical explanations of plague at the beginning of his sermon, including the corruption of the air from humidity and excessive heat or cold, putrefaction of water, vapors from the earth, and movements of the stars.¹⁵¹ A sermon’s critique of plague medicine suggests that the author expected his audience to have some knowledge of plague medicine. However, if the listeners did not know aspects of plague medicine before the sermon, they would have learned from the sermon itself.

Responsive sermons relied still more on the audience’s medical knowledge. The three plague sermons by Gabriel Biel (c. 1410/15–95) titled *Sermones medicinales contra pestilentiam* reveal that he was quite familiar with the

advice of plague tracts through his “extensive application of medical similes and metaphors throughout his plague sermons,” which also demonstrates that he believed his audience at Mainz Cathedral to possess some knowledge of plague medicine.¹⁵² While he does not entirely reject corporeal medicine, Biel considers spiritual medicine to be more effective and writes of it, as Gecser notes, using medical metaphors. Doctors prescribe and people use “potions, pills, powders, phlebotomy, fumigations, and odoriferous things.” These medicines are sometimes effective, but the poor often cannot afford them and, regardless, there is no universal medicine because everyone has a different complexion.¹⁵³ God’s medicine, however, is free and universal. In each sermon, especially on Dominica 22 and 23, Biel compares religious activities such as meditation, prayer, good works, and confession and penance to digestive, evacuative, and strengthening or preservative medicines.¹⁵⁴ For example, contrition, confession, and satisfaction are as evacuative of poisons as pills, powders, and phlebotomy and have a similarly bitter nature.¹⁵⁵ The spiritual equivalents of strengthening or preserving odoriferous medicines, specifically those intended to be sniffed, are such virtues as good works, prayers, listening to the word of God, abstinence, and almsgiving. Biel explains that these actions are

sweetly smelling sniffing materials, driving out every old stench of filthy things, and your good reputation is like an aromatic fume exhaling over a long distance through which is made your preservative medicine and through which defense no pestilence or mortality will be able to harm you in any way.¹⁵⁶

Biel plays off the long-held association between good works and spiritual good odor to draw a simile between pious Christian action that purges and strengthens the soul and the good odors that doctors prescribed to purge the body and strengthen it against the plague.¹⁵⁷ He makes the same argument in the sermon for Dominica 24.¹⁵⁸ In order to fully understand Biel’s point, his audience must not only have used sniffing medicines but also have known why they were using them.

In addition to translation of plague tracts, there was prescriptive literature written in the vernacular for instruction of non-Latinate audiences. Religious texts designed for the laity demonstrate awareness of the environmental causes of plague alongside the more important origin in divine will. A popular Latin prayer against the plague that was often included in late medieval books of hours was *Stella Celi Extirpavit*. This prayer unabashedly refers to scholastic explanations of the plague when it asks Mary, the Star of Heaven, to “counter the constellations whose strife brings the people the ulcers of a terrible death.”¹⁵⁹ The late medieval monk and poet John Lydgate (c. 1370–c. 1451) twice translated *Stella* into English verse. In each case, he replaces the plea to correct the bad formation of the stars with entreaties “to

restrain the mists of infected air” and to weaken infected airs “so that they have no power to infect us.”¹⁶⁰ In English translation, the cause of plague shifts from the abstract celestial realm to the terrestrial level of causation that physicians prescribed cures to address. Lydgate’s change of focus probably means that corrupt air was the cause of plague with which his audience was most familiar. Regardless, individuals praying in Middle English for the end of the plague using Lydgate’s translations learned that infected air was the immediate cause of the pestilence.

Lydgate also wrote one or perhaps two didactic poems providing medical advice against pestilence in the first half of the fifteenth century, probably on the occasion of the 1433–34 epidemic in London.¹⁶¹ Rather than being an original work, it is, as Julie Orlemanski notes, “a close translation of the anonymous fifteenth-century Latin poem the *Dietarium*, itself based in part on the popular thirteenth-century medical poem the *Regimen sanitatis Salernitanum*.”¹⁶² Lydgate’s full poem seems to have been the twenty-one stanza *A Dietary*, with the first three stanzas frequently copied as a separate poem titled *A Doctrine for Pestilence*.¹⁶³ The full poem survives in only one manuscript.¹⁶⁴ The excerption of a representative portion of the poem and the fifty-six extant manuscript copies of the short version, a diffusion exceeded only by the most well-known Middle English works such as the *Canterbury Tales* and the *Confessio Amantis*, speak to the popularity of the work.¹⁶⁵ Orlemanski shows that the poem “was copied and read as a representative of at least three different genres of Middle English writings.”¹⁶⁶ Extant copies appear alongside literature, in which case it is placed among other works of Lydgate and of Chaucer; in didactic works, including a manuscript of “moralistic” works compiled for children; and as part of medical compilations in Latin and the two vernaculars of England, which account for thirteen of the fifty-six copies.¹⁶⁷ Thus, the medical knowledge the poem contained was disseminated in more than only a medical context and directed towards a broad audience that even included children.

A Doctrine for Pestilence teaches all the basic medical advice for preserving health during times of plague: try to maintain an optimistic outlook, eat moderately and of foods that create little moisture in the body (such as chicken, vinegar, and spices), drink good wine moderately, sleep moderately, and avoid baths (because they overheat the body and dilate the pores, allowing fumes in more easily). Lydgate also recommends that “whoever wants to be whole, keep himself from sickness, and resist the pestilence ... [should] flee malign airs, avoid infected places, ... smell sweet things and, for his safety, walk in clean air [and] avoid black mists.”¹⁶⁸ He also advises that someone who wants to stay healthy should “have assistance from fire [and] delight in the great sweetness of gardens.”¹⁶⁹ Readers of the full *Dietary* found repeated the same guidance on maintaining health with an expanded section on fires. Lydgate recommends usage of “fire in the morning and towards bedtime in the evening against black mists and pestilential air.”¹⁷⁰ However, within the *Doctrine*, he concisely reviews the basics of the corrupt air theory by advising avoidance

of bad air and seeking out not only clean but fragrant garden air. He also endorses smelling sweet things and using fire to purify the air. Furthermore, he closes each stanza with a reference to black mists, and the last lines of the first and second stanzas are identical, perhaps for added emphasis.¹⁷¹ Because of the curtness of the advice in the *Dietary*, it seems likely that the poem served more as a reminder of medical recommendations that were already known rather than as a text for first-time instruction in plague prevention. Whatever the knowledge level of the average reader, however, *A Dietary* and *A Doctrine for Pestilence* are vectors through which corrupt air theory and the advice to burn fires and seek out good smells to counteract bad air reached vernacular audiences.

Use of the term “miasma” to describe the environmental cause of epidemic disease obscures the logic of medieval thought about the causes of pestilence. Medieval Latin sources describe the cause as a fume or vapor, which is a state of matter that is always present and only causes plague or other epidemic disease when it putrefies. Furthermore, when medieval sources discuss corrupt air, vapors, or fumes, it is safe to assume that they were also referring to bad odors. Not only did scholars know that odor and fume were nearly identical in nature, but they also understood that corruption always produced a stench. Medical practitioners were already quite familiar with treating smaller scale illnesses caused by stench or putrefied fumes when plague struck in 1348. Thus, doctors were able to advise individuals and governing authorities on preventative measures right away, despite their unfamiliarity with the specific disease. Even when the stars (or God) were the ultimate cause of plague rather than a local corruption, odor was always implicated in causing the disease because corruption always stank, and there were established treatments and preventative measures against bad odors. Knowledge of the powers of good and bad odor—varieties of vapors or fumes—was important in preventing pestilential air from entering the body and in curing the disease when it had taken hold of a person. Other cures, including prayer, diet, bloodletting, and other medicines, were applied along with odor cures. However, prevention and treatment with odors was an element of plague medicine that could not be dispensed with because of the nature of the disease.

The importance of preventing plague to every individual in late medieval Europe ensured that the basic tenets of the corrupt air theory became firmly established in popular culture over the course of the fourteenth and fifteenth centuries. By the fifteenth century in particular, residents of towns at least knew the methods for preventing plague, especially the vital preventative measures of burning air-rectifying fires and carrying pomanders or other odoriferous materials, even if they were as simple as vinegar, on one's person. With understanding of the corrupt air theory came knowledge of the basic powers of odors to heal and harm the body. Because corrupt air theory and olfactory theory were so similar, when late medieval townspeople learned about plague prevention, they also absorbed theories of olfaction.

Conclusion

Beginning in the thirteenth century and continuing to the end of the Middle Ages, the cities of Europe applied medical knowledge of the corrupt air theory to maintain and improve public health. Because urban cleanliness was necessarily cooperative, the inhabitants of towns must have learned the rudiments of corrupt air theory through aspects of civic life such as the general proclamation of the laws, enforcement of legislation, punishment of noncompliant citizens, and special decisions by authorities such as the King of England regarding the state of the streets. Familiarity with the infectious nature of bad odor and the palliative, preventative, and curative properties of good odor became still more widespread when the plague struck Europe in the fourteenth century. Modern scholars who study the plague and urban cleanliness agree that the idea of bad odor causing disease, if not the fine points of the corrupt air theory, became common knowledge in most sections of medieval society over the course of the late Middle Ages. What is less well understood is that the corrupt air theory also contains many of the basic elements of olfactory theory, because fume and odor have the same nature. When individuals carried pomanders or vinegar-soaked bread, when cities burned juniper or oak fires, and when doctors explained that pestilence was caused by putrefied vapors, all understood (albeit at different levels) and were implementing theories of olfaction.

Notes

- 1 Corrupt air theory continued to be a current medical belief in Europe until well into the nineteenth century, as Alain Corbin demonstrates in *The Foul and the Fragrant: Odor and the French Social Imagination* (Cambridge, MA: Harvard University Press, 1986).
- 2 Dolly Jørgensen, "The Medieval Sense of Smell, Stench and Sanitation," in *Les cinq sens de la ville du Moyen Âge à nos jours*, ed. Ulrike Krampl et al. (Tours: Presses Universitaires François-Rabelais, 2013), 302.
- 3 Carole Rawcliffe, *Urban Bodies: Communal Health in Late Medieval English Towns and Cities* (Woodbridge, UK: Boydell, 2013), 120–22.
- 4 Bryan Lee Grigsby, *Pestilence in Medieval and Early Modern English Literature*, Studies in Medieval History and Culture (New York: Routledge, 2004), 11–12.
- 5 Ibid., 153–54. See also 127–28, 131–38.
- 6 Ann G. Carmichael, "Plague Legislation of the Italian Renaissance," *Bulletin of the History of Medicine* 57 (1983): 508–25; Jo N. Hays, *The Burdens of Disease* (New Brunswick: Rutgers University Press, 1998), 54.
- 7 Jon Arrizabalaga, "Facing the Black Death: Perceptions and Reactions of University Medical Practitioners," in García-Ballester et al., *Practical Medicine*, 285–88.
- 8 Ibid., 287. Despite the evidence of the sources and the arguments in Arrizabalaga's well-known article, scholars of the plague sometimes assert that physicians did not have a concept of person-to-person contagion and therefore did not respond

appropriately to the plague. For example, in their 2015 book, Zlata Blažina Tomić and Vesna Blažina argue that the city of Dubrovnik had to develop ways to protect its citizens aside from medical advice because “[p]hysicians, burdened by Galen’s and Avicenna’s humoural and miasmatic theories, were not able to respond to the plague” (109). They credit the city council with developing quarantine measures beginning in 1377. The city was, however, employing medical professionals, including an Italian physician, in 1377. The authors acknowledge that “[t]he Council might have sought their advice when they prepared the quarantine legislation but there is no trace in the sources to indicate such a possibility” (107). Zlata Blažina Tomić and Vesna Blažina, *Expelling the Plague: The Health Office and the Implementation of Quarantine in Dubrovnik, 1377–1533* (Montreal: McGill-Queen’s University Press, 2015), esp. 106–09. There is another strain of plague scholarship that argues that the medical approach to the plague did not change significantly over time. Paul Slack argued in 1991 that early modern Europe worked from a theory of disease that combined miasma and contagion. Paul Slack, “Responses to Plague in Early Modern Europe: The Implications of Public Health,” in *In Time of Plague: The History and Social Consequences of Lethal Epidemic Disease*, ed. Arien Mack (New York: New York University Press, 1991), 437. Likewise, Annemarie Kinzelbach argued against the division between corrupt air theory and contagion in 2006 as she demonstrated that there was a two-level response to plague outbreaks in late medieval and early modern German cities. When the plague had not yet reached a city, defenses were set up against corrupt fumes. After the disease reached a city, the authorities tried to limit contagion by quarantine and similar measures. Annemarie Kinzelbach, “Infection, Contagion, and Public Health in Late Medieval and Early Modern German Imperial Towns,” *Journal of the History of Medicine and Allied Sciences* 61, no. 3 (2006): 369–89. Justin K. Stearns also emphasizes that “while administrative action against the plague, leading to the organizing of quarantines from 1378 onwards, does reflect a heightened emphasis on contagion, the ways in which contagion was conceived and represented did not change significantly from the fourteenth to the fifteenth century.” Justin K. Stearns, *Infectious Ideas: Contagion in Premodern Islamic and Christian Thought in the Western Mediterranean* (Baltimore: Johns Hopkins University Press, 2011), 94. An excellent overview of medieval European medical theories of the plague is Anna Montgomery Campbell’s *The Black Death and Men of Learning* (New York: Columbia University Press, 1931).

- 9 Furthermore, scholastic medical thought coexisted with the belief that the plague was a punishment from God. Religious and medical responses were not necessarily mutually exclusive.
- 10 E.g., Rawcliffe, *Urban Bodies*, 47; J. Coomans and G. Geltner, “On the Street and in the Bathhouse: Medieval Galenism in Action?” *Anuario de Estudios Medievales* 43, no. 1 (2013): 60–62.
- 11 Joseph Ziegler, *Medicine and Religion c. 1300: The Case of Arnau de Vilanova* (Oxford: Clarendon Press, 1998), 14.
- 12 Arrizabalaga, “Facing the Black Death,” 276.
- 13 Agostino Paravicini-Bagliani, *The Pope’s Body*, trans. David S. Peterson (Chicago: University of Chicago Press, 2000), 180.
- 14 *Ibid.*, 181.
- 15 Rawcliffe, *Urban Bodies*, 26–27, 123.
- 16 Arrizabalaga, “Facing the Black Death,” 275.

- 17 Dolly Jørgensen, "What to Do with Waste? The Challenges of Waste Disposal in Two Late Medieval Towns," in *Living Cities: An Anthology of Urban and Environmental History*, ed. Mattias Legnér and Sven Lilja (Stockholm: Formas, 2010), 41.
- 18 Dolly Jørgensen, "Cooperative Sanitation: Managing Streets and Gutters in Late Medieval England and Scandinavia," *Technology and Culture* 49, no. 3 (2008): 565–67.
- 19 Jørgensen, "Cooperative Sanitation," 550–62; Duccio Balestracci, "The Regulation of Public Health in Italian Medieval Towns," in *De Vielfalt der Dinge: Neue Wege zur Analyse mittelalterlicher Sachkultur*, ed. Helmut Hundsichler et al. (Vienna: Austrian Academy of Sciences, 1998), 346; Rawcliffe, *Urban Bodies*, 136–40; Dave H. Evans, "A Good Riddance of Bad Rubbish? Scatological Musings on Rubbish Disposal and the Handling of 'Filth' in Medieval and Early Post-Medieval Towns," in *Exchanging Medieval Material Culture: Studies on Archaeology and History Presented to Frans Verhaeghe*, ed. Koen De Groote et al. (Brussels: Flemish Heritage Institute, 2010), 268–69.
- 20 Jørgensen, "Cooperative Sanitation," 554–58; Rawcliffe, *Urban Bodies*, 134–36; Jørgensen, "What to Do with Waste?" 41.
- 21 There are many studies on medieval urban sanitation and public health that highlight legislation against these nuisances. See, for example, Rawcliffe, *Urban Bodies*, especially chapters 3 and 4; N.J. Ciecieznski, "The Stench of Disease: Public Health and the Environment in Late-Medieval English Towns and Cities," *Health, Culture, and Society* 4, no. 1 (2013): 92–104; Jørgensen, "The Medieval Sense of Smell," 301–13; Jørgensen, "What to Do with Waste?" 36–55; Jørgensen, "Cooperative Sanitation," 547–67; Balestracci, "The Regulation of Public Health," 345–57; Francesca Bocchi, "Regulation of the Urban Environment by the Italian Communes from the Twelfth to the Fourteenth Century," *Bulletin of the John Rylands Library* 72, no. 3 (1990): 63–78; David R. Carr, "Controlling the Butchers in Late Medieval English Towns," *The Historian* 70, no. 3 (2008): 450–61; Coomans and Geltner, "On the Street," 53–82; Evans, "A Good Riddance," 267–75.
- 22 *Si vero fuerit fumus melancholicus vel nimis acutus aut venenosus ex cibo vel potu aut ex medicina nociva resolutus ad cerebrum advolat, virtutem animalem aggravat, timorem generat, ut in melancholicis phrenesim et furorem excitat, ut in phreneticis et ebriosis, oblivionem et erisipilam generat, ut in lethargicis, sensus et rationis usu privat, ut in epilepticis et caducis. Has et multas alis infert corpori fumositates pessimas passiones et nocivas.* Bartholomew, *De proprietatibus rerum*, X.5, 478.
- 23 Ciecieznski, "The Stench of Disease," 97; Carr, "Controlling the Butchers," 450.
- 24 Jørgensen, "Cooperative Sanitation," 564; Rawcliffe, *Urban Bodies*, 136–40; Evans, "A Good Riddance," 268–69.
- 25 Martha Bayless, *Sin and Filth in Medieval Culture: The Devil in the Latrine* (New York: Routledge, 2012), 33; David Nicholas, *The Later Medieval City 1300–1500. A History of Urban Society in Europe* (New York: Longman, 1997), 333.
- 26 Rawcliffe, *Urban Bodies*, 144.
- 27 Bayless, *Sin and Filth*, 37–39.
- 28 Arrizabalaga, "Facing the Black Death," 276.
- 29 Rawcliffe, *Urban Bodies*, 143–44; Bayless, *Sin and Filth*, 33–36; Balestracci, "The Regulation of Public Health," 345–46; Coomans and Geltner, "On the Street," 60–62.

- 30 Bayless, *Sin and Filth*, 37–39.
- 31 Quoted in Carr, “Controlling the Butchers,” 456.
- 32 Karl Sudhoff, “Pestschriften aus den ersten 150 Jahren nach der Epidemie des ‘Schwarzen Todes’, 1348,” *AGM* 16 (1924–25): 24. This is one in a series of articles with the same title that Sudhoff published between 1910 and 1925.
- 33 Carr, “Controlling the Butchers,” 452–53.
- 34 Bocchi, “Regulation of the Urban Environment,” 73.
- 35 Nicholas, *The Later Medieval City*, 331.
- 36 *Ibid.*, 332; Carr, “Controlling the Butchers,” 453–54.
- 37 Carr, “Controlling the Butchers,” 453; Reginald R Sharpe, ed., *Calendar of Letter-Books of the City of London: G, 1352–1374* (London: HMSO, 1905), 28r.
- 38 Carr, “Controlling the Butchers,” 456–58.
- 39 Jørgensen, “The Medieval Sense of Smell,” 307–12; *Calendar of Close Rolls, Edward III*, Vol. 13 (London: HMSO, 1911), 31–32, 177–78, 438.
- 40 *Calendar of Close Rolls, Edward III*, Vol. 4 (London: HMSO, 1900), 634–35; Ciecieszki, “The Stench of Disease,” 95.
- 41 Pedro Gil-Sotres, “Derivation and Revulsion: The Theory and Practice of Medieval Phlebotomy,” in García-Ballester, *Practical Medicine*, 120.
- 42 Gil-Sotres, “Derivation and Revulsion,” 120; Balestracci, “The Regulation of Public Health,” 350.
- 43 Ciecieszki, “The Stench of Disease,” 97.
- 44 John Aberth, *An Environmental History of the Middle Ages: The Crucible of Nature* (New York: Routledge, 2013), 64.
- 45 Balestracci, “The Regulation of Public Health,” 353; Nicholas, *The Later Medieval City*, 333.
- 46 Jacme d’Agramont, “Regimen of Protection against Epidemics or Pestilence and Mortality,” trans. M.L. Duran-Reynals and C.-E.A. Winslow,” *Bulletin of the History of Medicine* 23 (1949): 69.
- 47 *Ibid.*, 70.
- 48 Jørgensen, “Cooperative Sanitation,” 565–67.
- 49 Bayless, *Sin and Filth*, 35–36; Carr, “Controlling the Butchers,” 455–56.
- 50 On a more personal level, individuals within and outside of towns maintained clean and pleasant-smelling households. Even average and poor households could afford to change the grasses on the floor and strew them with fragrant local herbs to maintain a pleasant smell in their homes. More affluent households commonly fumigated rooms, especially bedrooms, with spices by the late fifteenth century. This custom likely developed during times of plague, when correcting indoor air quality was imperative. Wealthy individuals also wore perfumes, carried pomanders, and perfumed their clothing and bedding throughout the later Middle Ages. Woolgar notes that perfuming clothing “was considered a sin worthy of confession before the mid-thirteenth century” (141). These personal hygiene practices may have been intended to have some effect on health as well as on social standing, especially after the arrival of the plague increased awareness among individuals of the necessity of maintaining good odors in the household to prevent disease. C.M. Woolgar, *The Senses in Late Medieval England* (New Haven: Yale University Press, 2006), 141–45.
- 51 Arrizabalaga, “Facing the Black Death,” 243–44.
- 52 Shona Kelly Wray, “Boccaccio and the Doctors: Medicine and Compassion in the Face of Plague,” *Journal of Medieval History* 30 (2004): 322.

- 53 Arrizabalaga, "Facing the Black Death," 239–41.
- 54 Ottó Gecser, "Doctors and Preachers against the Plague: Attitudes toward Disease in Late Medieval Plague Tracts and Plague Sermons," in *The Sacred and the Secular in Medieval Healing: Sites, Objects, and Texts*, AVISTA Studies in the History of Medieval Technology, Science and Art 10, ed. Barbara S. Bowers and Linda Migl Keyser (New York: Routledge, 2016), 82. The shorter version of the *Compendium* also adds sin as a cause of the plague, which is not found in the Latin original or the longer French translation. *Ibid.*, 84.
- 55 Campbell, *The Black Death*, 17.
- 56 Rawcliffe, *Urban Bodies*, 60–62.
- 57 E.g., the late fourteenth-century letters under the heading "Deutsche Übersetzung des Sendbriefs über die Pest an Kaiser Karl IV" in Sudhoff, "Pestschriften aus den ersten 150 Jahren nach der Epidemie des 'Schwarzen Todes', 1348," AGM 4 (1910–11): 199–203.
- 58 Arrizabalaga, "Facing the Black Death," 288.
- 59 Coomans and Geltner, "On the Street," 60–62.
- 60 Rawcliffe, *Urban Bodies*, 47.
- 61 Kinzelbach, "Infection, Contagion, and Public Health," 382.
- 62 *Ibid.*, 379–81.
- 63 Gecser, "Doctors and Preachers," 85–86.
- 64 *Ibid.*, 87–88.
- 65 Sudhoff's "Pestschriften" articles are filled with texts that use these terms specifically to describe the causes of the plague. See Sudhoff, "Pestschriften aus den ersten 150 Jahren nach der Epidemie des 'Schwarzen Todes', 1348," AGM 4 (1910–11), 191–222, 389–424; 5 (1911–12), 36–87, 332–96; 6 (1912–13), 313–79; 7 (1913–14), 57–114; 8 (1914–15), 175–215, 236–89; 9 (1915–16), 53–78, 117–67; 11 (1918–19), 44–92, 121–76; 14 (1922–23), 1–25, 79–105, 129–68; 16 (1924–25), 1–69, 77–188; 17 (1925), 12–139, 241–91. Likewise, Rawcliffe quotes numerous examples, both Latin and vernacular, of city records that cite the dangers of corrupt air, vapors, and fumes in *Urban Bodies*. See also Jørgensen, "The Medieval Sense of Smell," 301–13; Jørgensen, "What to Do with Waste?" 36–55; Carr, "Controlling the Butchers," 450–61; Kinzelbach, "Infection, Contagion, and Public Health," 372, 376. Wray also recognized that plague doctors wrote about "corrupted air, poisonous vapors, and bad fumes." Wray, "Boccaccio and the Doctors," 307.
- 66 E.H. Rebouis, ed., *Compendium de epidemia per collegium facultatis medicorum Parisius ordinatum*, I.2, in *Étude historique et critique sur la peste* (Paris, 1888), 80.
- 67 [A]er non putrefit per se nisi propter commixtionem vaporum, a terra et ab aqua eleuatorum uel ab aliis corporibus. Sic nec aqua putrefit nisi propter admixtionem alicuius substantie terree. Sudhoff, "Pestschriften," AGM 16, 37; See also Sudhoff, "Pestschriften," AGM 4, 210–11.
- 68 [F]umus venenosus horribilis pestiferus. Sudhoff, "Pestschriften," AGM 16, 61.
- 69 Sudhoff, "Pestschriften," AGM 4, 219; Sudhoff, "Pestschriften," AGM 5, 367; Sudhoff, "Pestschriften," AGM 16, 23, 47–48; Rebouis, *Compendium de epidemia*, I.3, 86; Jacme d'Agramont, *Régimen of Protection*, 66–67.
- 70 Rebouis, *Compendium de epidemia*, I.2, 80.
- 71 Sudhoff, "Pestschriften," AGM 16, 23.
- 72 Sudhoff, "Pestschriften," AGM 4, 213; Sudhoff, "Pestschriften," AGM 5, 48–49, 65, 73, 82, 83–84; Sudhoff, "Pestschriften," AGM 16, 6–8, 36–37, 49, 61, 68;

Rebouis, *Compendium de epidemia*, II.2.1, 118; Jacme d'Agramont, *Regimen of Protection*, 75.

- 73 [F]ere a peste immunes conspiciebantur. Dionysius Colle, *Medicina practica, sive methodus cognoscendorum et curandorum omnium affectuum malignorum et pestilentium*, in *Lehrbuch der Geschichte der Medicin und der epidemischen Krankheiten*, Vol. 3, by Heinrich Haeser (Jena, Germany: Fischer, 1882), 170.
- 74 [V]enenum enim venenis debellatur, arcetur et expellitur. Ibid.
- 75 Cf., Bartholomew, *De proprietatibus rerum*, XIX.39, 1168.
- 76 Colle, *Medicina practica*, 170.
- 77 Wray, "Boccaccio and the Doctors," 310–11; Sudhoff, "Pestschriften," AGM 16, 147.
- 78 Sudhoff, "Pestschriften," AGM 11, 49; Wray, "Boccaccio and the Doctors," 309.
- 79 Unde etiam dicit quidam Philosophus, quod Mauri bene odorant, quia non potant vinum. Albertus Magnus, *De homine*, q. 28, art. 2, 35:258.
- 80 [I]deoque difficilius inficitur. Michele Savonarola, *Practica canonica de febris* (Lyons, 1560), ch. 9, rub. 1, 203; Danielle Jacquart, "Theory, Everyday Practice, and Three Fifteenth-Century Physicians," *Osiris* 6 (1990): 146.
- 81 However, ancient medical tradition may have survived in medieval thought in some form through early Christian authors and other ancient and late antique texts. Most Latin-language explanations of the Justinian plague, which was an outbreak of bubonic plague that first struck in 541 and recurred until 750, attribute it to God, if to any cause, but there are indications in discussions of plague in some texts, including Gregory of Tours's *History of the Franks* and Isidore of Seville's *Etymologies*, that ancient medical thought was not lost. Indeed, Alain Stoclet shows that ancient medical traditions were known among Christians in the Latin West during the time of the Justinian plague. Alain Stoclet, "*Consilia humana, ops divina, superstitio*: Seeking Succor and Solace in Times of Plague, with Particular Reference to Gaul in the Early Middle Ages," in *Plague and the End of Antiquity: The Pandemic of 541–750*, ed. Lester K. Little (Cambridge: Cambridge University Press, 2007), 135–49.
- 82 Aberth provides a good overview of medieval thought on the environmental cause of plague, vapors, and fumes corrupting the air, in *An Environmental History*, 56–63.
- 83 Campbell points out that in 1348–50, only the University of Paris medical faculty put emphasis on celestial causes. Other authors were more concerned with corrupt air. Campbell, *The Black Death*, 124.
- 84 Sudhoff, "Pestschriften," AGM 4, 210–11.
- 85 Wray, "Boccaccio and the Doctors," 315–16.
- 86 Avicenna, *Canon*, I.2.2.9, 1:105–06.
- 87 Constantine, *Pantegni*, Theory VI.11, 20r.
- 88 Ibid., VI.2, 18v.
- 89 The authors of plague tracts seem to make more of a distinction between fumes, vapors, and terrestrial exhalations than authors concerned with olfaction, perhaps because they used *Meteorologica* to a greater extent than authors writing about smell. For example, the pestilential odors coming from stagnant water are nearly always spoken of as vapors.
- 90 Avicenna, *Canon*, III.1.1.6, 1:433.
- 91 [D]e mortuorum ethiopum corruptionibus. Constantine, *Pantegni*, Theory V.11, 20r.
- 92 Rebouis, *Compendium de epidemia*, I.2, 82; Sudhoff, "Pestschriften," AGM 16, 37, 49, 61; Arrizabalaga, "Facing the Black Death," 254–56.

- 93 Jacme d'Agramont, *Regimen of Protection*, 66.
- 94 Arrizabalaga, "Facing the Black Death," 254–56.
- 95 [*F*]etor aquae maxime est causa ipsius pestilentiae. Sudhoff, "Pestschriften," AGM 4, 213.
- 96 Ibid., 213–14. See also Sudhoff, "Pestschriften," AGM 5, 338.
- 97 Jacme d'Agramont, *Regimen of Protection*, 67–68.
- 98 "[S]tynten caryn cast in the water nye to the cytees or towns ... and the corrupcion of privys, of this the water is corrupt; and when as mete is boyled, and drynke made of this water, many sikenes is gendered in mannes body; and also of the castyng of stynkyng waters and many other foule thinges in the streates the ayre is corrupte; and of keypyng of stynkyng waters in houses or in kechyns long tyme; and then, in nyght, of those thinges vapours ar lyft up in to the ayre, the whiche doth infecte the substance of the ayer, by the whiche substance of the ayre, corrupte & infecte, men to dy [die] sodenly goyng by the stretes or by the way; of the whiche thinges let every man that loveth god and his neighbour amende." Rawcliffe, *Urban Bodies*, 188, quoted from BL, Add. MS 27582, fol. 71v. My translation.
- 99 Arrizabalaga, "Facing the Black Death," 255.
- 100 Jacme d'Agramont, *Regimen of Protection*, 69.
- 101 [*N*]onnulla loca in nostris regionibus immunda et stercorosa sunt. Sudhoff, "Pestschriften," AGM 16, 24.
- 102 [*A*]erem toto tempore sunt inficientia. Ibid.
- 103 Sudhoff, "Pestschriften," AGM 16, 39–40.
- 104 Bartholomew, *De proprietatibus rerum*, XIX.39, 1167; Rawcliffe, *Urban Bodies*, 32–33, 123–24. Leprosy is another disease that medieval medicine considered to be contagious through the breath of the infected. On leprosy in the Middle Ages, see, Carole Rawcliffe, *Leprosy in Medieval England* (Woodbridge, UK: Boydell, 2006), esp. 90–95, 133–42; Luke Demaitre, *Leprosy in Premodern Medicine: A Malady of the Whole Body* (Baltimore: Johns Hopkins University Press, 2007); Christine M. Boeckl, *Images of Leprosy: Disease, Religion, and Politics in European Art*. Early Modern Studies 7 (Kirkville: Truman State University Press, 2011).
- 105 [*C*]orruptitur aer re<center?> ex fetido id est ex anhelitu fetido, et ergo malum est visitare infirmos tempore pestilentiae propter anhelitum fetidum. Sudhoff, "Pestschriften," AGM 4, 211.
- 106 [*Q*]uereres, quare est morbus contagiosus? dico quia a talibus corporibus effumant fumi venenosi corruptentes aerem et humors. Et ideo est fugiendum ab istis infectis. Sudhoff, "Pestschriften," AGM 16, 62.
- 107 Jacme d'Agramont, *Regimen of Protection*, 69–70.
- 108 Ibid., 71.
- 109 Aer itaque appetendus qui bone substancie est, cui non administratur aliquod ex infirmis alias firmis nec ex vaporibus putridis eleuatis a luto uel sterquiliniis uel a paludibus et vniversaliter a quibuscumque rebus fetentibus. Sudhoff, "Pestschriften," AGM 16, 39–40.
- 110 Quoted in Carmichael, "Plague Legislation," 511.
- 111 Blažina Tomić and Blažina, *Expelling the Plague*, 106–09.
- 112 Balestracci, "The Regulation of Public Health," 356; Rosemary Horrox, ed. and trans., *The Black Death* (New York: Manchester University Press, 1994), 196.
- 113 Jørgensen, "The Medieval Sense of Smell," 302; Horrox, *The Black Death*, 198.
- 114 Carmichael, "Plague Legislation," 509.

- 115 Concern with food contamination might also reflect the concern of doctors that even healthy individuals eat moderately of foods that were moderately hot and not humid at all to counteract the hot and moist air of pestilence. As in lethargy, eating too much increases phlegm in the body, and excess moisture is easily corrupted. (Phlebotomy was recommended for purging excess humors, which created the problem of disposing of the blood before it corrupted and gave off dangerous fumes.) The city of Pistoia and the Milanese doctor may have worried that the food would absorb the excess heat and moisture of the corrupt, stinking air, giving it an unsuitable complexion.
- 116 Gilles Li Muisis, *Corpus Chronicorum Flandriae*, Vol. 2, ed. J.-J. De Smet (Brussels, 1837), 380; partially translated in Horrox, *The Black Death*, 52–53.
- 117 Horrox, *The Black Death*, 53; *Qui de vino utebantur, et se a malo aere et visitatione infirmorum abstinebant, pauci aut nulli decesserunt. Sed alii infirmos visitantes et frequentantes aut infirmabantur graviter aut decedebant* (Gilles Li Muisis, *Corpus Chronicorum Flandriae*, 381).
- 118 Arrizabalaga, “Facing the Black Death,” 275–76.
- 119 Ibid., 275. See also Rebouis, *Compendium de epidemia*, II.1.1, 94–100.
- 120 Sudhoff, “Pestschriften,” AGM 4, 197, 220; Sudhoff, “Pestschriften,” AGM 5, 35, 63, 81, 334, 338, 352–53, 355–56, 371–73, 386, 394; Sudhoff, “Pestschriften,” AGM 16, 27, 40, 56, 58–59, 62.
- 121 *Summe cavendum est ab aere fetido vel in quo fetor sive odor malus quam summus sit existens. Ex rebus enim, quae spiritum vitalem alterant et ad malum permutant, nulla est fetori similis, ut secunda fen primi canonis asserit Avicenna ... pro ipsius aeris rectificatione quae in praesenti tempore pestilentiae summe necessaria existit, licet nullus in eo sit fetor, utendum est saepe suffumicationibus et maxime in camera ubi quis dormit.* Sudhoff, “Pestschriften,” AGM 5, 371.
- 122 Arrizabalaga, “Facing the Black Death,” 260; Sudhoff, “Pestschriften,” AGM 4, 197; Sudhoff, “Pestschriften,” AGM 5, 63, 334. Avicenna had recommended the use of vinegar against the plague, which made it a common component of the foods, drinks, medicines, and substances for smelling prescribed in plague tracts: “[t]o use vinegar in food and drink during pestilence is a surety against its harm” (*Aceto praeterea in cibo et potu uti in pestilentia, est nocumenti ipsius securatio*) Avicenna, *Canon*, bk. 1, fen 3, doct. 5, summa 1, ch. 1, 190. The Paris masters quote this passage when recommending vinegar in food, drink, and medicines during the plague. Rebouis, *Compendium de epidemia*, II.2.2, 120.
- 123 Jacme d’Agramont, *Regimen of Protection*, 76–79.
- 124 Ibid., 79.
- 125 Arrizabalaga, “Facing the Black Death,” 285; Rebouis, *Compendium de epidemia*, II.2.2, 128–32.
- 126 E.g., Sudhoff, “Pestschriften,” AGM 4, 195, 196, 198, 200, 204, 213, 221–22. On pomanders and musk balls, see Ronald W. Lightbown, *Mediaeval European Jewellery: With a Catalogue of the Collection in the Victoria and Albert Museum* (London: Victoria and Albert Museum, 1992), 355–57.
- 127 *[Q]uia cor maxime per odorativa confortatur.* Sudhoff, “Pestschriften,” AGM 5, 339.
- 128 Rebouis, *Compendium de epidemia*, II.2.3, 140.
- 129 *[I]psa enim habet vehementem proprietatem letificandi et confortandi simul, et est ad hoc potentior propter fortitudinem sue aromaticitatis, et ideo est confortativa substantie cujuslibet, spiritus et membrorum principalium, et multiplicativa ipsius.* Rebouis, *Compendium de epidemia*, II.2.3, 136.

- 130 Sudhoff, "Pestschriften," AGM 5, 372; Sudhoff, "Pestschriften," AGM 16, 9.
- 131 On the use of ambergris against the plague in pomanders and for fumigation, see John M. Riddle, "*Pomum ambrae*: Amber and Ambergris in Plague Remedies," *Sudhoffs Archiv für Geschichte der Medizin und der Naturwissenschaften* 48, no. 2 (June 1964): 111–22. Riddle acknowledges the use of the odor of ambergris to prevent and cure plague, but he does not recognize the heat and dryness of the substance that made it effective—and possibly dangerous because of its ability to overheat the body—during times of pestilence (114).
- 132 Rebouis, *Compendium de epidemia*, II.2.3, 136–38.
- 133 Woolgar, *The Senses in Late Medieval England*, 138–39.
- 134 Lightbown, *Mediaeval European Jewellery*, 355–56.
- 135 *Ibid.*, 356.
- 136 *Ibid.*, 357.
- 137 Norman Davis, ed., *Paston Letters and Papers of the Fifteenth Century*, pt. 1, EETS s.s. 20 (Oxford: Clarendon Press, 1993; Ann Arbor: Early English Text Society, 2004), 212.
- 138 Lightbown, *Mediaeval European Jewellery*, 344, 347, 351.
- 139 *Ibid.*, 351.
- 140 Giovanni Boccaccio, *Decameron*, First Day, trans. J.M. Riggs (London, 1903), 8; "portando nelle mani chi fiori, chi erbe odorifere e chi diverse maniere di spezierie, quelle al naso ponendosi spesso, estimando essere ottima cosa il cerebro con cotali odori confortare, con ciò fosse cosa che l'aere tutto paresse dal puzzo de' morti corpi e delle infermità e delle medicine compreso e puzzolente" (Giovanni Boccaccio, *Decameron*, Prima Giornata, ed. Vittore Branca (Turin: Einaudi, 1992), 8).
- 141 Wray, "Boccaccio and the Doctors," 303.
- 142 *Ibid.*, 312. Wray convincingly demonstrated that Boccaccio's and other authors' depictions of doctors as ineffective, uncompassionate, and often absent is inaccurate.
- 143 *Ibid.*, 303, 305, 315.
- 144 Horrox, *The Black Death*, 111; *Quantaesiquidem mortalitates, pestilentiae, et aeris infectio in diversis mundi partibus, et praesertim Anglicanis, immineant his diebus, non est, eum sit publicum, qui ignoret; et hoc quippe hominum peccata efficiunt* (James Raine, ed., *Historical Letters and Papers from the Northern Registers*. Rolls Series (London, 1873), 396).
- 145 Horrox, *The Black Death*, 113; *avertat a populo suo hujusmodi pestilentiam ... aeremque salubrem ... concedat* (Thomas Scott Holmes, ed., *Register of Bishop Ralph of Shrewsbury*, Somerset Record Society X. (Somerset Record Society, 1896), 556).
- 146 Gecser, "Doctors and Preachers," 85–88.
- 147 *Ibid.*, 89.
- 148 *Ibid.*, 89–91.
- 149 *Ibid.*, 94.
- 150 *Ibid.*, 97–98.
- 151 Bernardino da Feltre, "Feria quinta post secundam Dominicam post Pasca in die S. Marci: De Peste," *Sermoni del beato Bernardino Tomitano da Feltre nella redazione di fra Bernardino Bulgarino da Brescia*, Vol. 2, ed. Carol Varischi da Milano (Milan: Renon, 1964), 266.
- 152 Gecser, "Doctors and Preachers," 96.

- 153 *[P]otionibus, pillulis, pulveribus, fleubothomia, suffumigationibus, et odoriferis.* Gabriel Biel, "Dominica 22," *Sermones dominicales de temperatam hyemales quam estivales divini verbi eximii concionatoris Gabrielis Biel Spirensis* (Haguenau, 1520), 144v. Gecser uses the 1510 Haguenau edition, but the copy of that edition available online is missing fol. 144r, where the plague sermons begin. The 1520 edition seems to be identical to the 1510.
- 154 Ibid., "Dominica 23," *Sermones dominicales*, 146r.
- 155 Ibid., 146v.
- 156 *[O]lfatoriola suave redolentia, omnem vetuste feditatis fetorem pellentia, atque bonam vostram famam velut fumum aromatum longe exhalantia per quod facta est medicina vostra preservativa, qua muniti nulla pestis, nulla mortalitas nocere vos poterit quovis modo.* Ibid., 147v.
- 157 Ibid.
- 158 Biel, "Dominica 24," *Sermones dominicales*, 148r.
- 159 Horrox, *The Black Death*, 124; *ipse stella nunc dignetur / sydera compescere / quorum bella plebum cedunt / dire mortis vlcere* (Christopher Wordsworth, ed., *Horae Eboracensis: The Prymer of Hours of the Blessed Virgin Mary*. Surtees Society 132 (London: Andrews, 1920), 69).
- 160 "Off infect heyr the mystis to restreyne." John Lydgate, *Stella Celi Extirpauit (I)*, l. 13, *The Minor Poems of John Lydgate*, Vol. 1, ed. Henry Noble MacCracken EETS e.s. 107 (London: Milford, 1934), 295; "Vs to infect that thei haue no puis-sance." Lydgate, *Stella Celi Extirpauit (II)*, l. 21, in *Minor Poems*, 1:296.
- 161 Walter F. Schirmer, *John Lydgate: A Study in the Culture of the XVth Century*, trans. Ann E. Keep (Berkeley: University of California Press, 1961), 177.
- 162 Julie Orlemanski, "Thornton's Remedies and the Practices of Medical Reading," in *Robert Thornton and his Books: Essays on the Lincoln and London Thornton Manuscripts*, ed. Susana Fein and Michael Johnston (Rochester, NY: Boydell and Brewer, 2014), 235.
- 163 Schirmer, *John Lydgate*, 111–12. Orlemanski treats *A Doctrine for Pestilence* as a separate work, perhaps because of the variations among extant copies of *A Dietary*. Orlemanski, "Thornton's Remedies," 254. The poems contain similar references to pestilential air, so I have chosen to follow Schirmer's assertion and MacCracken's assumption that they are the same poem.
- 164 Orlemanski, "Thornton's Remedies," 253.
- 165 Ibid., 251.
- 166 Ibid., 252.
- 167 Ibid., 252–53.
- 168 "Who will been holle & kepe hym from sekenesse / And resiste the strok of pestilence, / Lat hym ... / Flee wikked heires, eschew the presence. / Off infect placys, ... / Smelle swote thyng[es] & for his deffence / Walk in cleene heir, eschew[e] mystis blake." John Lydgate, *A Dietary, and A Doctrine for Pestilence*, ll. 1–8, in *The Minor Poems of John Lydgate*, Vol. 2, ed. MacCracken, EETS o.s. 192, 702.
- 169 "[W]ith fyr have assistance, / Delite in gardeyns for ther gret swetnesse." Ibid., ll. 10–11, 2:702.
- 170 "Fire at morwe & toward bed at eve, / Ageyn mystis blake & heir of pestilence." Ibid., ll. 129–30, 2:706. Lydgate also brings up the utility of walking in sweet-smelling gardens again: "Walk in gardeyns sote of ther savour." Ibid., l. 37, 2:703.
- 171 Grigsby also recognizes the significance of the repetition of this line as advice against the plague. Grigsby, *Pestilence*, 135.

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Part 3

The spiritual sense of smell



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5 The smell of my son

The sense of smell in theology to c. 1200

As did philosophy and medicine, medieval theology recognized two main types of odors, the sweet odor of sanctity and the foul stench of sin. These key elements of spiritual smell did not develop in the Middle Ages but were legacies of early Christianity, which had itself adapted them from the olfactory religious practices and beliefs of other Mediterranean religions.¹ While the odor of sanctity and the stench of sin are the two basic types of spiritual odor, each could be subdivided. The odor of sanctity had several subtypes, but the most common were the aroma of martyrdom, the fragrance of virtue, the perfume of good works, and the scent of a good reputation. In more physical terms, spiritual good odor was sometimes described as floral or spicy. Specific types of sinful stench are more unusual; just as physical stench was not usually subcategorized, spiritual stench was often merely stench. However, the stench of heresy and lust were sometimes divided from the general stench of sin. The stench of death was used as a description of the stench of sin, as were specific references to corpses or excrement. Because the stench of sin led to damnation, sulfur was also commonly associated with sinfulness and demonic presence.

The two poles of spiritual odor in the Middle Ages have been the topic of book-length sensory research, especially since 1990.² The spiritual sense of smell, on the other hand, has received less attention from scholars. However, Christian authors from early times through the Middle Ages did discuss spiritual olfaction, and their discussion often hinged on an analogy between the physical role of the nose and its spiritual one. There are parallels between physical and spiritual theories of smelling from late antiquity onwards. While the analogy begins to deepen around 1200 and only becomes widespread after 1300, there was frequent consideration of the physical role of the senses in discussions of their spiritual powers. The simplest definition of the nose's function was that it smelled good and bad odors, which translated into the good odor of God and the bad odor of the Devil. The sense organ itself was a third important element of the spiritual sense of smell. Authors from early Christian times through the Middle Ages regarded the spiritual power of the sense of smell as the power to make judgments between good and evil. Furthermore, since the nose could smell things that were far away or otherwise

not visibly present, a Christian with strong spiritual awareness could perceive divine or demonic scents that were not noticeable to others. The concept that the spiritual nose distinguishes between good and evil had its roots in the early Christian past. However, early and central medieval scholars built a strong tradition around the concept of the nose that possesses the power of discretion between good and evil as they discovered it in works of Gregory the Great (c. 540–604). From Gregory, it moved into Song of Songs commentary and sermons. While all of the spiritual senses had the general function of perceiving religious truth, the power of the spiritual sense of smell to differentiate with certainty between good and evil was firmly established by the end of the twelfth century.

Spiritual odors

Although ritual use of aromatics was controversial and frequently forbidden in early Christianity, the practices of anointing newly baptized Christians, recently ordained priests, and freshly crowned monarchs with scented oil and of censuring during daily mass and special celebrations became established parts of Christian worship during late antiquity and the early Middle Ages. These material uses of odor were important to religious understandings of smell. However, it was the metaphorical language of odor in the Bible and other Christian texts that was instrumental in forming the Christian theology of smell.³ Late antique and early medieval religious writers enunciated and standardized concepts of the odor of sanctity, the stench of sin, and the proper function of the spiritual nose in distinguishing between these opposites that informed central and late medieval concepts of olfaction in theology.

Susan Ashbrook Harvey, whose discussion of spiritual smell in late antiquity has inspired much olfactory research, argues that early Christians developed a theology around olfaction that allowed the sense to reveal information about human and divine identity. She found that “two basic paradigms governed the development of a Christian olfactory culture: incense as the marker of sacrifice, the process of human-divine interaction; and perfume as the marker of divine presence, signifying the condition of blessing or grace.”⁴ These paradigms are the basis of the odor of sanctity, a good smell that signifies divine presence or approval; the stench of sin, a bad odor that indicates sinful behavior, demonic presence, and divine disapproval in general; and the aromas of martyrdom, prayer, and good works, which are sacrifices to God. Similarly, Martin Roch identified three types of odors that appear in early medieval religious contexts: those of plants and flowers, which are related to fragrant places such as gardens; those related to worship, which are odors in sacrifice to God, whether martyrdom, incense, or prayers; and those related to communication, which include the odors of virtue and a good reputation.⁵ Each of these basic varieties of spiritual odor persisted throughout and beyond the Middle Ages.

In general, a good or bad spiritual odor revealed the alignment of a person, place, object, or spirit with either God and goodness or the Devil and sinfulness. While the odor of sanctity and the stench of sin are the two basic types of spiritual odor, there was significant variation in the types of odors of sanctity. Most commonly, the odor of sanctity might manifest as the scent of virtue, the aroma of good works, the fragrance of martyrdom, or the perfume of a good reputation. The odor of martyrdom is most common in early Christian and early medieval sources, when Christians were being martyred. While it still appeared in traditional stories in the central and late Middle Ages, the odors of virtue, good works, and good fame filled sermons and narratives about recent events.

The odor of sanctity frequently features in late antique and early medieval stories of holy people, often as the aroma of martyrdom. For example, the second-century martyr Polycarp famously smelled like frankincense when he was burned to death, an odor that indicated both his sanctity and his status as sacrifice to God.⁶ Similarly, many early medieval saints were discovered to be holy on or sometime after their deaths, when their corpses released fragrant odors.⁷ Roch shows that a sweet odor at or near the death of a holy person was not merely an expected element in the life of a saint but served as “a demonstration of the virtue of the dying or the reality of their privileged perceptions, a sign of celestial presence or the reality of corporeal resurrection.”⁸ The good odor of a holy person removed any doubt that the person was favored by God and provided the faithful with some evidence of the existence of God through the miracle of the perfumed corpse. For example, in the *Dialogues*, Gregory the Great tells the story of a monk in his monastery named Merulus who had a dream shortly before he died of a crown of white flowers being placed on his head. Fourteen years later, another monk was digging a grave beside that of Merulus and smelled a sweet fragrance like flowers coming from Merulus’s grave, revealing that the vision had been true.⁹ In Roch’s terms, this example shows both Merulus’s virtue, because he was honored with a vision from Heaven, and the reality of his vision, because someone else perceived evidence of it.

The odor of good works, the fragrance of personal virtue, and the aroma of good fame were closely linked, because someone who was personally virtuous tended to do good works and to have a good reputation based on both their virtue and their actions. In addition, virtues, good works, and a good reputation created a likeness between the individual and Christ, who was the sweetest-smelling sacrifice to God.¹⁰ For example, the Anglo-Saxon homilist Ælfric (c. 955–c. 1010) wrote in an Easter Sunday sermon that “we who believe in the resurrection of Christ come certainly to his grave with precious salve if we are filled with the breath of holy virtues and if we seek our Lord with a reputation for good works.”¹¹ Like the three Marys who came to Christ’s tomb with aromatics to honor his corpse, good Christians honor Christ for his death if they practice virtue and good works, which is confirmed through their reputation among their neighbors.

Good works also served as a sacrifice to God. In *De paradiso*, Ambrose (c. 340–97) explains that “Enoch, who was translated and did not see death, is a certain ruby stone of good odor, which holy Enoch offered to God with his works, exhaling [odor] thanks to his works and habits.”¹² In the midst of likening biblical figures to precious stones, Ambrose compares Enoch to a fragrant ruby. He had earlier linked rubies with human souls.¹³ Here, the ruby of Enoch’s soul exhales an odor pleasant to God through his good morals and good works. The odor of Enoch’s good works could be taken further to symbolize his entire body and soul ascending to Heaven through his good deeds, the odor of which rose to Heaven like an incense sacrifice.

The corpses of saints were sometimes fragrant, contrary to the usual stench of death, which revealed their virtue, personal sacrifice, or good deeds and nearness to Christ. William of Malmesbury (c. 1095–c. 1143) relates the discovery of the fragrant holy body of Mildburh, an Anglo-Saxon princess and abbess. He explains that she had been popular among the Anglo-Saxons but was neglected after the Norman Conquest. However, when William wrote, she had recently begun to be honored again after the body was rediscovered by a child. The corpse was identified as Mildburh by the odor of balsam that filled the church as soon as the boy put his foot through the rotten floor boards above her grave.¹⁴ After it was discovered, her body began to perform miraculous cures or alleviations of suffering in people whom doctors could not help. Both the odor and the cures indicated the presence of the divine.

Since divinity so frequently manifested as a good odor in opposition to putrid sinfulness, the odor of sanctity was indispensable to descriptions of Paradise. Peter Damian (1007–72) wrote about his impressions of the monastery of Cluny to its abbot, Hugh (1024–1109), using bucolic language:

I have, indeed, beheld a paradise watered by the streams of the four Gospels, abounding, moreover, with a like number of streams of spiritual virtues. I have seen a garden of delights that contained varied graces of roses and lilies, filled with the sweet smelling fragrance of perfumes and spices, of which almighty God might truly say, “Ah, the smell of my son is like the smell of the open country blessed by the Lord.” And what else shall I call the monastery of Cluny but the open country of the Lord, where like a vast field of heavenly grain there dwells in mutual love a similar band of monks.¹⁵

This vision of Cluny as Paradise illustrates a primarily olfactory description of Paradise as a fragrant garden or field. The virtues of the monks give the monastery not only a paradisiacal aroma of good works but a Christ-like sacrificial fragrance. Peter implements the odor of sanctity in the guise of Paradise, good works, and sacrifice to incite Cluny to keep a promise to celebrate the day of his death and to pray for his soul.

The odor of sanctity, whether it wafted from a living or dead body or from a holy place or object, was always a sign of divine approbation. Its counterpart,

the stench of sin that attended demons and humans who behaved badly, was undeniable evidence of God's disapproval. Roch cites an example of the stench of sin from Gregory of Tours's account of a bishop's runaway slave who sold false relics. The slave passed out drunk in a church and filled it with a stench that signified the severity of his sins as well as his state of advanced inebriation.¹⁶ The stench of human sinners was more commonly spiritual than physical, however, and was detectable only by those in possession of spiritual olfaction. One of the most extreme examples of an offensively smelling sinner is the account Reginald of Durham (d. 1190) gives in the *Libellus de admirandis beati Cuthberti* about what happened when Helisend, the servant of Matilda, wife of David I of Scotland, entered St. Cuthbert's church at Durham. There was an old tradition that women were not allowed inside the church, but Helisend was convinced that Cuthbert would allow her to visit since she was a virgin. She disguised herself in a black cape and went inside the church, thinking she would blend in with the monks and not get caught. St. Cuthbert, however, was immediately disturbed by her presence. His spirit appeared angrily before the sacristan, Bernard,

and he seized him, haranguing him and blaming him with sharp tones, saying, "Go as quickly as you can and expel that she-wolf¹⁷ who stank up the threshold of my church and throw her out with haste! The filthiness of her stench is spreading all around my church, and the hall of my rest, which was injured by her entrance, is polluted by the fume of her filth! I am not strong enough to have a quiet rest in my place of peace as long as I sense the odor of the uncleanness of that she-wolf! Therefore, hurry up and find her, eject from my church that she-wolf, stinking with the contagion of all uncleanness, tossing her out of the boundaries! She could not hide the reckless plots of her presumption from me! She filled the air inside my entire church all around with her clouds of stench soon after her entrance!"¹⁸

Bernard is both angry and terrified after Cuthbert's tirade. He storms around the monastery, breaking down doors and searching every corner until he finally sees Helisend. He rushes towards her furiously and grabs her, shouting at her as Cuthbert had at him:

"For shame," he said, "are you not that she-wolf of filth, that bitch of putrid filthiness, that cloud of impropriety, that fog of soot, that shadow of stench, that student of iniquity, that snare of fetidity, that sewer of corruption? Madwoman, have you really profaned the sanctuary of God by your presumption, polluted this holy and shining place, roused St. Cuthbert, who was sleeping in contemplation of God, by disturbing him, and presumed to attack the inaccessible by harassing celestial beings with your annoyance? Truly, you are the one who forced the putridity of stench on his sacred nostrils and polluted this hall of blessedness with the

uncleanness of filthiness!" And seizing her by the hand, he dragged her out of the church.¹⁹

In Reginald's account, Cuthbert and the sacristan Bernard employ a colorful vocabulary of dirtiness and stench to describe the effect of Helisend's presumptuous entrance into the church. The woman's spiritual filth and stench are polluting to Cuthbert's church, and the saint even considers her uncleanness to be contagious. Although holy people such as Cuthbert were disgusted by many aspects of a sinner, stench was often a point of focus because an odor struck the senses before most other sensory information and in spite of any disguise they may adopt.

Demons revealed their nature through stench too. In Sulpicius Severus's fifth-century *Life of St. Martin*, the devil appeared to Martin of Tours (d. 397) looking far from demonic, dressed in purple robes and adorned with jewels and gold.²⁰ The saint was too dazzled to speak. The demon twice asked Martin to acknowledge that he was Christ. Guided by the Holy Spirit, Martin replied that he would only believe the apparition was Christ if he appeared as he was on the cross. The devil "immediately vanished like smoke, and the cell was filled with a great stink, a certain sign left behind that he had been the devil."²¹ While in other cases Martin could see through demonic disguises, in this case, he could not.²² He relied instead on challenging the demon, which provoked it into revealing its true, corrupt nature in a cloud of stench.

Just like visions of Heaven and Paradise, visions of Hell were often odorous. The odors of Hell were described as fiery or sulfurous or compared to bitumen or pitch. Bede (c. 672–735) related Drythelm's visions of both Heaven and Hell in the *Ecclesiastical History of the English People*. Hell is in a valley full of fire on one side and ice on the other, with souls being tortured on both sides. Drythelm's guide takes him deep inside Hell to a dark place full of fire, the screams of human souls, and the laughter of demons. The "vaporous flames" were filled with human souls, and "an incomparable stench that boiled out with the vapors filled all those shadowy places."²³ Some of the evil spirits, Drythelm relates, "surrounded me, and they tormented me with their burning eyes and breathing putrid fire from their mouths and nostrils."²⁴ Drythelm's guide soon rescues him, taking him to Heaven, where the strong smell of flowers overcomes the lingering stench of Hell.

A vision of Hell with considerably more olfactory detail is recorded in the *Vision of the Monk of Eynsham*, in which Adam of Eynsham (c. 1155–after 1233) narrates the 1196 vision of his brother Edmund. Edmund is led by St. Nicholas through places of reward and punishment. The latter are perhaps nearer to Purgatory than Hell, because Edmund follows the progress of some souls through punishment towards Paradise. Among the varied torments in the first place of punishment, he relates that he saw souls in "baths of pitch and sulfur with a horrific stench."²⁵ The second place of punishment is a mountain with a valley below it containing a stagnant river "that continually exhaled a cloud of indicative stench."²⁶ The souls in this place were punished

by being dunked in the stinking water, burned in fire, and then thrown into cold snow before starting the cycle over again. One of the souls here is a “certain prince,” Henry II of England, who sits on a horse that exhales pitch-black fire from its mouth and nostrils that is infused “with the smoke and stench of the underworld.”²⁷ He is punished by both the stench and the heat of his armor, which is like red hot iron.

The third place of punishment is a field. Edmund marvels that “a certain horrific chaos covered that field higher up, by which sulfurous fumes were rotated and mixed, a cloud of immense stench.”²⁸ The souls were attacked by snakes “breathing detestable fire through their nostrils.”²⁹ The fire in that place was so hot that it even burned and killed the snakes, whose corpses added to the punishment of the sinners:

The dead snakes, burst and broken to bits, were collected under the unhappy souls in a heap. These bodies filled the whole place so detestably with putrid, decomposing fluid and the stench of rottenness that that filth exceeded every aforesaid torment of punishments.³⁰

Thus, in the third place of punishment, the souls are tormented by the stench of sulfur and death, the latter being the worst of all the torments in Hell.

Sodomites, sinners of lust, are punished in this place. Edmund is appalled by the punishments he sees here and does not examine the faces of the sinners very closely

because the enormity of the obscenity and torments and the extreme immensity of the stench forced weariness and horror on me simultaneously. Nevertheless, I did not sense the stench through experience, just as I did not sense the hurt of the other punishments, nor indeed if I had sensed it would I have been able to live any longer, just as was shown to me. On the contrary, it was enough to perceive the intolerable magnitude of all these intellectually in my mind.³¹

The stench of the punishment is strong enough that it would have killed Edmund if he had perceived it with his physical senses. It is reasonable to extend this assertion about the strength of the olfactory punishment to all the sensory input Edmund describes in the entire vision, but the placement of his reminder that a living human body was not equipped to deal with infernal punishments alongside an account of the stench of lust is significant.

Sexual sins were usually considered the most fetid, and the stench of lust was accordingly a common subtype of spiritual stench. Ælfric cited it in an Epiphany sermon, explaining to his listeners that if they burned spiritual myrrh to God in the form of abstinence, it would prevent the spiritual stench of lust, just as physical myrrh prevented flesh from rotting.³² Lust, then, causes the soul to rot like a corpse. *De miseria humane conditionis*, composed in 1195

by the future Pope Innocent III (1160/1–1216), is insistent that the primary features of lust are the prompting of the flesh, the heat of desire, and stench, a triad of qualities that makes his descriptions of lust similar to descriptions of Hell.³³ These three qualities corrupt any pure soul that might be conceived in intercourse, which is also tainted by the sinful nature of its mother as the soul's vessel.³⁴ However, Innocent does not always cite all three aspects of lust.³⁵ Speaking of sodomy and the punishment of Sodom and Gomorrah, he focuses on heat and stench, explaining that "the Lord rained out of Himself not rain and dew, but brimstone and fire: brimstone for the stench of lust, fire for the heat of passion—a penalty fit for the crime."³⁶ When he addresses the difficulty of motherhood, he merely says that the mother "conceives the child with uncleanness and stench."³⁷ The only element that runs throughout this discourse on lust is stench, the evidence of corruption.

The emphasis on heat, smoke (fume), and stench in descriptions of Hell and on heat and stench in Innocent's descriptions of lust are reminiscent of medical discussions of bad odor, specifically the idea that the action of excess heat on a body produces it.³⁸ Although the imagery of heat, smoke, and stench in Hell predates the Middle Ages, the resemblance of these qualities to those that produce putrefaction and stench cannot have been lost on central and late medieval scholars. Indeed, Innocent III is the first pope who without doubt appointed an official papal doctor. He also supported the examination of corpses by medical professionals in cases of murder or accidental death. Furthermore, several physicians gained high-ranking administrative positions in the Church at the end of the twelfth and the beginning of the thirteenth century.³⁹ There are also similarities between Innocent's descriptions of stench and the qualities that create putrefaction and stench, such as heat and fume, and the spontaneous generation of worms from rotten corpses in the *Prose Salernitan Questions*.⁴⁰ All of these reveal Innocent's interest in contemporary medicine. Although Innocent's language is traditional enough that it is difficult to say with certainty that his discussions of stench and putrefaction were influenced by medical thought, there are striking similarities.

The stench of sin was frequently compared to two almost universally repulsive natural processes: death and excretion. Martha Bayless points out that the rotting corpse a fitting symbol of sin, because the corruptibility of the body was punishment for sin, not the natural state of humanity.⁴¹ She also argues that since it was "an act of eating that brought sin into the world, ... it was only natural that excrement, the corrupt results of digestion, should be the emblem of this original transgression."⁴² Bayless cites examples of the links between stench and original sin from the thirteenth through the fifteenth century. Roch likewise notices that early medieval sources often present the stench of sin as putrefaction of the soul or body and connect it to excrement, vomit, and corpses. Like later medieval texts, early ones include the stench of lepers, sinners, heretics, and demons.⁴³

The stench of heretics, Jews, or other non-Christians is a common example of the stench of sin. Bayless shows that members of these groups "were

regularly portrayed as honoring the bottom as a central point of the sinful ceremonies,” including kissing the backsides of humans or animals such as cats or pigs and eating excrement.⁴⁴ At the end of the Middle Ages, the actions of heretics and Jews became assimilated with witchcraft beliefs, which is reflected in many late medieval and early modern images of witches kissing the devil’s behind.⁴⁵ Heresy might also be linked with disease, such as cancer or pestilence, or with general corruption. In an 1177 letter to the Cistercians, Count Raymond V of Toulouse complained about “this putrid corruption [*tabes*] of heresy” in his lands, referring to Catharism.⁴⁶ R.I. Moore associates this use of *tabes* with putrid leprous sores.⁴⁷ It is possible, however, that it only indicates rotting, corrupt liquid, as above in Edmund’s description of rotting snake corpses in one of the places of punishment.⁴⁸ Raymond goes on to lament that “those who perform the functions of the priesthood are depraved by the fetidity of heresy,” causing them to neglect their duties.⁴⁹ He compares the heretics to the man in Job 40:18 who “swallows a river and does not wonder [that he was able to swallow it] because of the audacity of his unjust presumption.”⁵⁰ Continuing the drinking metaphor, he complains that, despite his own efforts, “my most noble lands, now offered a libation of the putrid fluid [*tabes*] of faithlessness, are parched” because they lack the acceptable beverage of the orthodox Christian faith.⁵¹

While the spiritual and physical senses might reveal truth, theologians also suspected and mistrusted the latter, especially in the ascetic and monastic traditions. However, as Harvey points out, the theme of a text often indicates whether an author will praise or disparage sensory information. Authors frequently took up both attitudes towards the senses across their body of work. Such influential early Christian authors as Gregory of Nyssa, John Chrysostom, Ambrose, and Augustine emphasized the dangers of worldly attachment through the senses.⁵² The senses became windows or gates that must be guarded against the incursion of temptation, horses or oxen that need to be controlled by the driver, or anything that forms a group of five in the Bible or in other texts. Parables such as the five wise and five foolish virgins (Matthew 25:1–14), the five yoke of oxen (Luke 14:15–25), and the five husbands of the Samaritan woman (John 20:16–18) became representations of the physical and spiritual senses in early Christian texts, and they were common interpretations in the Middle Ages as well.⁵³

Peter Damian wrote about the senses as city gates that must be guarded against the world in a letter to a bishop. He explained that

we are arrayed in a city that is seen to have five gates, since we live in a body girded with five senses. And so, we obstruct these gates with bars, and use bolts, locks, and spikes when we carefully guard the gateways of our senses from invading vices and from the vanities of the world.⁵⁴

He also asserts that the five kings of Midian in Numbers 31 signify the five senses.⁵⁵ Likewise, the early thirteenth-century Middle English *Ancrene*

Wisse, a guide written for a group of anchoresses, explains that the senses are connected to the heart and soul, and therefore they must be guarded.⁵⁶ Because the senses provided information about the world to the soul, they also were openings through which the soul could be harmed.

Although the senses required guarding, they were not entirely untrustworthy if they were controlled. The *Anticlaudianus*, a long Latin poem by Alain of Lille (c. 1128–1202/03) popular through the end of the Middle Ages, figures the senses as horses. The noblest and most accomplished horse is sight, followed by hearing, smell, taste, and touch, in that order. The horse of smell is invisible and covered in fragrant flowers. His mother was impregnated by the wind, referring to a legend mentioned in Pliny's *Historia naturalis* that certain horses conceive that way.⁵⁷ In *Anticlaudianus*, Nature "forces the untamed team to submit to the yoke," thus rendering the potentially dangerous senses useful to human knowledge.⁵⁸

Unlike the physical senses, the spiritual senses, including smell, were generally trustworthy in the information they provided about the spiritual world because only holy people had access to them. Spiritual odors indicated the alignment of a person, place, or thing with either Heaven or Hell. Harvey discusses this as smell's "capacity to reveal identity."⁵⁹ Behind the capability of spiritual odors to reveal identity is the idea that the basic power of the physical sense of smell is to distinguish between good and bad smells. While the definition of the sense of smell as the sense that distinguishes between good and bad odors is, to a certain extent, available to anyone through observation of daily experience, that simple definition was also part of the primarily Greek-language philosophy of the ancient and late antique worlds.

Despite the artificial lines between philosophy and theology that often must be drawn in modern scholarship in the interests of space and coherence, quests for knowledge of nature and knowledge of the divine have never been completely separate. Many early Christian writers were familiar with ancient and contemporary philosophical concepts of the senses. Neoplatonism in particular became incorporated into Christian discussions of the spiritual senses starting in the second century, and it was usual to apply its language to the Christian perception of God by the fourth.⁶⁰ Even Augustine (354–430), who claims in the *Confessions* that he is not much tempted by odors, knew the sense object of odor, vapor.⁶¹ Nemesius, the bishop of Emesa whose late fourth-century *De natura hominis* was one of the first sources of ancient philosophical information about the senses to become available during the central medieval period, wrote far more on the nature of odor than Augustine. In *De natura hominis*, which was intended for a mixed pagan and Christian audience, Nemesius unapologetically discusses the opinions of philosophers and physicians, including Plato, Aristotle, Plotinus, the Stoics, Hippocrates, and Galen, alongside the information found in the Bible and written by other Christian authors.⁶² Sometimes the non-Christian authors merely provide contrasting opinions, but often they are the sources of authoritative information about the body and soul that Nemesius integrates with Christian belief.⁶³

When early Christians authors used sensory language to explain encounters with and knowledge of the divine, they sometimes drew on the philosophical tradition. Harvey demonstrates that the philosophy of olfaction was particularly useful for such purposes as explaining the relations and distinctions among the members of the Trinity and the relationship between the human and the divine, because the sense of smell was capable of communicating information about the essence of a thing without the visible presence of the object releasing the odor. By drawing on the philosophy of olfaction, theologians could explain human knowledge of God, imperfect but still certain. The metaphor of odor perception could create simultaneous unity and division between the human and divine.⁶⁴ Roch likewise draws attention to the influence of philosophy on ancient and early medieval theologians, especially in describing the spiritual senses as they are analogous to the physical senses.⁶⁵ Although late antique and early medieval authors did not always incorporate philosophy as fully into Christian belief as did Nemesius of Emesa, the idea that the simplest function of the nose is to distinguish good and bad odors and that it plays the same role spiritually was commonplace.

The spiritual nose

The spiritual senses did not exist as a cohesive doctrine in early Christianity, and even in the Middle Ages there was considerable flexibility in the ways that authors might present the sense-like perception of God.⁶⁶ What early Christian and early medieval authors did was to develop the metaphors of spiritual odor discovered by Harvey and Roch. These metaphors hardened in the central and late medieval periods so that not only the senses but also other body parts had specific virtues or powers that were associated with them more commonly than others. For example, a sermon from a fifteenth-century English collection warns that just as leprosy destroys the physical body, lust destroys every part of a person's spiritual body:

[T]he sin of lust is designated through leprosy ... because it consumes the whole person ... It takes away ... the eyes of intelligence ... the ears of obedience, the nose of discretion [*nares discrecionis*], the hair of good thoughts, the beard of fortitude, the eyebrows of holy indignation, the hands of good works, the feet of holy affection, and the tongue of confession, prayer, and preaching.⁶⁷

The sermon writer connects body parts with Christian actions, abilities, and emotions, and he does not assign them at random. Each body part had a tradition of being associated with a certain trait. Modern scholars have recognized these medieval perceptions of the unique qualities of the senses, especially vision, which was often employed as a metaphor for knowledge and intelligence.⁶⁸ The interpretation here of the nose as a tool of discretion was also part of a long-standing medieval tradition signaled in Latin by use of the

phrase *nares discretionis*, the noun *discretio* (discretion), and variations on the verb *cernere* (to discern or separate), especially *discernere*.

The nose of discretion is a late medieval name for a concept with early Christian roots. Its firmest textual origins are, however, in early and central medieval exegesis of a part of Song of Songs 7:4, “Your nose is like the tower of Lebanon that looks towards Damascus.”⁶⁹ While there were assertions of the discriminatory abilities of the spiritual nose in early Christian texts of many genres, including Pseudo-Dionysius’s *Celestial Hierarchy*, the late medieval nose of discretion derives ultimately from Gregory the Great’s explications of Song of Songs 7:4 in three of his works, which became the foundation of the standard medieval interpretation of that verse. Gregory’s influence is evident in major early and central medieval Song commentaries. By the twelfth and early thirteenth centuries, the nose’s symbolism was so firmly established that any discussion of discretion might lead authors to cite Sg. 7:4. At the same time, scientific thought about the sense of smell began to be incorporated into the theology of olfaction. The nose of discretion was easy to merge with recent scholastic thought because of the metaphor’s frequent discussion of the anatomy and function of the nose.

Scholars who have noticed the connection between smell and discernment between good and evil in medieval texts have cited the language of Pseudo-Dionysius’s *Celestial Hierarchy* (5th–6th c.) as the source for the metaphor.⁷⁰ The *Celestial Hierarchy* aligns with Harvey’s findings on early Christian olfactory theology in its comparison of the human senses to those of angels. Pseudo-Dionysius explains that the angels’ “powers to discern smells indicate their capacity to welcome fully those fragrances which elude the understanding and to discern with understanding those opposites which must be utterly avoided.”⁷¹ Pseudo-Dionysius was not the only early Christian author to suggest that the nose had the power to discern between good and evil. Harvey found several examples of monks reputed to be able to smell sin or virtue in other people.⁷² An instance more similar to the *Celestial Hierarchy* is Origen’s second- or third-century *Dialogue with Heraclides*. Origen compares the physical sense of smell with the spiritual one, explaining that in “someone who has healthy organs for perceiving divine things, there is a perception of the good odor of righteousness ... and the bad odor of sins” that is analogous to smelling physical odors.⁷³ It is important to note that for Origen, as for Pseudo-Dionysius and other early writers, all the spiritual senses had similar abilities to recognize good and avoid evil. Nevertheless, this explanation of spiritual smelling was commonplace in late antiquity.

Rather than Pseudo-Dionysian theology, the medieval usage of the nose of discretion metaphor came out of the tradition of Song of Songs commentaries. Explication of Sg. 7:4 consistently links the nose with discrimination throughout the Middle Ages, beginning with Gregory the Great. Song exegesis describes the nose as a tool of discretion long before Pseudo-Dionysius’s texts began to re-enter Western European thinking in the twelfth century.⁷⁴ Gregory might have drawn inspiration from any number of early Christian

authors. However, if he was inspired by one source, it is likely that it would have been a Song commentary, since he always discusses the discretionary powers of the nose in connection with Sg. 7:4. The tradition of Song commentaries is usually considered to begin with Origen; however, his exegesis exists only in a fragment that ends with Sg 2:15.⁷⁵ Early Christian Song commentary that does address later chapters sometimes interprets the nose of Sg. 7:4 in other ways than as a symbol of discretion. For example, Philo of Carpasia's fourth-century commentary identifies the nose as a symbol of St. Paul.⁷⁶ It was, however, more usual to discuss the nose's ability to distinguish between good and evil, as do the commentaries of Theodoret of Cyrus (c. 393–c. 458), St. Ambrose (c. 340–97), and Apponius (fl. 4th–5th c.).⁷⁷ These authors were not, however, as explicit in linking the nose with spiritual discrimination as were later Western authors, beginning with Gregory the Great.

Gregory's exposition of the Song of Songs was well-known and was appreciated in the Middle Ages, not only through his incomplete commentary (which ends at Sg 1:8) but also through compilations of his explications of Song verses in other works, three of which compilations were made between the late sixth and twelfth century.⁷⁸ Given the popularity of Gregory's comments and his widespread influence on later commentators, it is unsurprising that the decided identification of the Bride of Christ's nose as a tool of discrimination between good and evil derives largely from his influence. He cites Sg. 7:4 in four passages contained in three works: *Liber regulae pastoralis*, *Moralia in Job*, and *Homiliae in Ezechielem*.⁷⁹ In each case, Gregory explicitly gives the Bride's nose the power of discernment, and the nose symbolizes either the discernment of holy men or the discernment that should pertain to priests.

Two passages in which Gregory mentions Sg. 7:4 will suffice as examples of his interpretation: one of the two passages from *Regulae pastoralis* and the discussion in the *Homiliae*. In the former example, Gregory cites Sg. 7:4 alongside Leviticus 21:18 to describe the temperaments of men who should and should not serve as priests, while in the latter he discusses it in conjunction with Ezekiel 3:17, again to describe the ideal priest. Gregory's strong association of the nose of discretion with clergymen is a feature of the spiritual nose that remained prominent throughout the rest of Middle Ages and speaks to its origin in Gregory's exegesis.

Lev. 21:18 prohibits people with a variety of disabilities, including blindness, lameness, and a nose that is too large, too small, or crooked, from serving as priests. In *Regulae pastoralis*, Gregory merges Leviticus's discussion of noses with Sg. 7:4. He sets up the nose as a symbol of discretion, explaining that "we naturally discern good odors and stench with the nose. Therefore, the nose rightly symbolizes the discretion through which we chose virtues and reject sins."⁸⁰ The properly proportioned nose is tower-like, just as the Bride's nose in Sg. 7:4. The tower-like nose symbolizes proper discretion, because with it the Church can detect temptations and sins before they arrive, just like a watchman in a tower. However, if the metaphorical nose of a clergyman is not properly proportioned, his discretion does not operate well. Thus, the future pope explains,

a man with a little nose is one who is incapable of discretion [*discretionis*] ... But there are [also] not a few who, not wishing to be thought stupid, often exert themselves in more investigations than is necessary, and they are beguiled by too much subtlety. For that reason, it is also added here, "Or a large and crooked nose." Indeed, a large and crooked nose is immoderate subtlety of discretion [*discretionis*]. When it grows more than it ought, it distorts the correctness of its own action.⁸¹

Physically, the nose distinguishes between good and bad smells, and therefore its spiritual function is to distinguish between virtue and sin. The small nose of Leviticus designates a man who cannot discern virtue from vice. The big, crooked nose is a disfigured spiritual nose that symbolizes someone who judges more than necessary. The Church, as the Bride of the Song of Songs, possesses proper discernment and foresight of approaching sin. Figuratively, this spiritual virtue is a well-proportioned, tower-like nose. Since it is the Church's function to foresee evil, those with improper discretion, illustrated in Leviticus as disfigured and disproportional noses, should not become priests.

Gregory links Sg. 7:4 with the responsibilities of the priest more explicitly in the *Homiliae*, where he interprets the prophet's activities in Ezekiel 3:15–28 as those of a priest, focusing especially on Eze. 3:17, "Son of man, I have given you as a watchman to the house of Israel." Gregory argues that "height of life must be maintained so that truth of preaching may be preserved."⁸² The necessary height of life is figured in Sg. 7:4 as the tower-like nose (i.e., the discretion of the watchman). The nose is compared to a tower

because indeed the discretion [*discretio*] of sentinels must always be fortified with circumspection and take a stand on the height of life, i.e. not lie in the valley of weak action. For just as a tower is placed on a peak to watch so that the enemies who come are seen from afar, thus the life of the preacher must always remain fixed on high so that like the nostrils he may discern [*discernat*] the stench of vice and the perfume of virtue. He may perceive from afar the assaults of evil spirits and through his providence keep the souls committed to him safe.⁸³

Just as the watchman needs to be high up so that he can see dangers before they arrive, the preacher should live a better life than his charges so he can foresee moral dangers to them. Here more than in *Regulae pastoralis*, Gregory emphasizes the symbolism of the nose as good judgment (*discretio*), and the necessity for priests to achieve this measure of discretion in order to do their jobs properly. The ideal priest uses his discernment to defend the souls under his care from oncoming sin, and the symbol of his discernment is a tower-like spiritual nose.

In each citation of Sg. 7:4, Gregory interprets the nose as a symbol of discretion and gives the power to those who are in charge of Christian souls. The most significant use of Gregory's explications was in Bede's Song of Songs

commentary, because it was highly influential on later exegesis.⁸⁴ In his exposition of Sg. 7:4, Bede employs the same emphasis as Gregory on the nose and its ability to discern between good and evil. He makes the nose symbolic of the priesthood but also suggests that it is useful to any Christian:

Since odors and stench are distinguished [*discerni*] through the nose, the stewards of God's word ... are now ... designated as a nose on account of their most salubrious discretion [*discretionis*], which the fathers esteem as the mother of virtues, doubtless because it is as though they exercise the olfactory function more fully than others in discerning [*dinoscere*] which actions or words burn with the good odor of Christ, and which breathe the deadly stench of heresy. For a teacher, or any one of the faithful, frequently has need of careful discretion [*discretione*] lest by chance vices should hide under the guise of virtues.⁸⁵

Preachers, who are in charge of teaching others God's word, are designated by the nose because they can discern true from false teaching readily, just as the nose distinguishes good from bad odors. For Bede, the physical and spiritual roles of the nose are blended into the "olfactory function," linking discretion with smelling rather than with foresight, as had some of Gregory's examples. Although he associates discretion primarily with preachers, Bede notes that discretion is an important virtue for any Christian.

The usual explication of the nose of Sg. 7:4 became an assertion that the Bride's nose was a symbol of the discretion of priests. This was because the nose's power to discern between good and bad odors for the sake of the body was analogous to a priest discerning between good and evil for the sake of the souls in his care. He might protect them from heresy or merely from general sin. There might also be a suggestion that all Christians used discretion to protect their souls. Nearly every Song commentary after Bede interprets the nose of Sg. 7:4 in this way, in more or less detail. The commentaries of Alcuin (c. 735–804), Haimo of Auxerre (fl. 840–70), Robert of Tombelaine (fl. late 11th c.), Honorius Augustodunensis (1080–1154), and Nicholas of Lyra (c. 1270–1349) are a few prominent examples.⁸⁶ The interpretation of the Bride's nose as a symbol of discretion was so ingrained in thought by the twelfth century that writing about either the nose or discretion outside of biblical exegesis could inspire an author to cite Sg. 7:4. For example, Gratian's *Decretum* repeats Gregory's advice in *Regulae pastoralis* about the discretion necessary in a priest.⁸⁷ A sermon targeted at priests in a twelfth-century French collection similarly embeds a discussion of Sg. 7:4 into a larger explanation of Lev. 21:18, proclaiming that "the nose signifies discretion in divine texts." Discretion is so important to priests that the nose of the Church is likened to the tower of Lebanon.⁸⁸ Finally, a text on the sacraments by Bruno of Segni (c. 1047–1123) cites Sg. 7:4 as a justification for the touching of the nose in baptism, which he argues occurs so that the new Christian can discern good from evil, especially regarding Christian doctrine.⁸⁹

Although most of the more innovative discussions of the spiritual discernment of the sense of smell occurred after 1200, when medical analogies became more common, Thomas the Cistercian (d. c. 1190) already incorporated Arabic medical information on the sense of smell in his Song exegesis, which is the only complete Cistercian commentary and exists in sixty manuscripts.⁹⁰

Thomas the Cistercian's unusually long explication of Sg. 7:4 begins with the usual attribution of the nose to preachers because of the analogy between smelling and discretion. Far from being limited to the naturally talented, however, this advanced state of spiritual sensation can be achieved through meditation and prayer. The Devil attacks Christians in various ways, including by darkening the eye of reason, but the Christian can defeat the Devil by praying for aid from God. Thomas advises, "so that you will have a nose, beg from God the breath of discretion for the illumination of reason."⁹¹ The Cistercian effortlessly transforms the clouded eye of reason into a nose filled with *spiritum discretionis*, the breath or spirit of discretion, that is able to unobscure correct reasoning, reflecting the traditional connection between the nose and the watchful Christian in the tower. However, the nose's discretion is not only available to preachers. Thomas reinforces that argument by identifying three varieties of spiritual nostrils through biblical citation: demonic, animalistic, and human nostrils. Only the truly human nose is able to distinguish between what is good and what is bad because of the virtue of discretion contained in it, which Thomas calls "the breath [*spiritus*] for discretion of good and evil."⁹² Playing off the dual meaning of *spiritus*, he emphasizes the importance of wise discretion to all Christians.

Finally, Thomas describes the similarity between the biological and spiritual functions of the nose in a way that demonstrates his familiarity with contemporary philosophical and medical overviews of smell:

The nose purges the moisture from the head, brings respiration to the soul, and has the discretion of odors. It purges moisture from the head; that is, it cleanses the soul that is our head from sin. It gives respiration to the soul so that it goes out and may sometimes be occupied in setting temporal things in order, and sometimes it may be idle inside, concerned with heavenly things. It has the discretion of odors because in itself it decides whether they are suitable or unsuitable so that it might act concerning all of them.⁹³

The nose drains superfluous moisture from the head, which is analogous to removing sin from the soul (the head of the individual). It also plays an important role in breathing, which Thomas links to the soul sometimes focusing externally (breathing out) to handle necessary temporal affairs and other times turning inward (breathing in) to contemplate spiritual things. Finally, smelling is the judgment of things to determine their qualities, which is the heart of both the physical and spiritual functions of the olfactory sense.

Although he does not correct Sg. 7:4 on the instrument of smell, it is clear that Thomas was familiar with a philosophical or medical source that explains the three main purposes of the nose, such as the *Pantegni*.⁹⁴

Throughout the early and central Middle Ages, biblical exegesis on the Song of Songs affirmed the concept that the spiritual power of the nose was discrimination between good and evil. The nose of discretion was particularly valuable to those who were in the world and in charge of protecting weaker Christians, just like the watchman in the tower. In the late twelfth century, Thomas the Cistercian updated the exegesis of the nose of Sg. 7:4 with reference to contemporary medical belief and re-emphasized the importance of virtue of discretion to all Christians and especially to the Church.

Conclusion

A well-established tradition of Christian theological writing about the sense of smell informed medieval thought. The basic elements of the spiritual sense of smell, just as of the physical sense, were good and bad odors, which signified closeness to God or to the Devil, and the sense organ, which was able to distinguish between these two extremes. The likeness between this basic outline of spiritual smell and the essentials of physical smell is not accidental. Basic philosophical and medical concepts were often at the foundation of early Christian discussions of the spiritual senses. Although the philosophy behind the spiritual sense of smell may have become obscured in the time between Nemesisius of Emesa and Thomas the Cistercian, scholars began to draw contemporary philosophy and medicine into theology in the late twelfth and early thirteenth century. The best example in this chapter is Thomas the Cistercian's exposition of Sg. 7:4, in which the physical functions of the nose align with its spiritual functions. The similarities between the physical and spiritual noses and the odors they sensed are underlined further in late medieval sources. After 1200, a medically aware theology of smell moved out of Latin literature, exegesis, and didactic works and into sermons and vernacular mystical texts. Late medieval olfactory theology demonstrates another layer of communication about the sense of smell between scholastic and popular audiences.

Notes

- 1 There are several excellent book- and article-length studies of both material and metaphorical odors in late antique Christianity. The basic texts on this topic are Susan Ashbrook Harvey, *Scenting Salvation: Ancient Christianity and the Olfactory Imagination* (Los Angeles: University of California Press, 2006) and Béatrice Caseau, "Euodia: The Use and Meaning of Fragrances in the Ancient World and their Christianization (100–900 AD)" (Princeton University PhD dissertation, 1994). Mary Thurlkill compares early Christian understandings and usages of odors with Islamic ones in *Sacred Scents in Early Christianity and Islam*

- (New York: Lexington Books, 2016). There is a thorough review of the uses of incense in Christianity in E.G. Cuthbert F. Atchley, *A History of the Use of Incense in Divine Worship* (London: Longmans, 1909). There are also book-length studies on olfaction in cultures that influenced or developed alongside Christianity. Deborah Green has studied smell in late antique Judaism with a focus on the Byzantine East in *The Aroma of Righteousness: Scent and Seduction in Rabbinic Life and Literature* (University Park: Pennsylvania State University Press, 2011). On Greece, see Marcel Detienne, *Gardens of Adonis: Spices in Greek Mythology*, trans. Janet Lloyd (Hassocks, UK: Harvester Press, 1977). On Rome, there is a recent dissertation that examines smell in Roman literature: Kate Allen, “Stop and Smell the Romans: Odor in Roman Literature” (University of Michigan PhD dissertation, 2015). There is also a recent article collection edited by Mark Bradley that covers both civilizations: *Smell and the Ancient Senses* (New York: Routledge, 2015).
- 2 Jean-Pierre Albert, *Odeurs de sainteté: la mythologie chrétienne des aromates* (Paris: École des Hautes Études en Sciences Sociales, 1990); Martin Roch, *L'intelligence d'un sens: odeurs miraculeuses et odorat dans l'Occident du haut Moyen Âge (Ve–VIIIe siècles)* (Turnhout: Brepols, 2009); Valerie Allen, *On Farting: Language and Laughter in the Middle Ages* (New York: Palgrave MacMillan, 2007); Martha Bayless, *Sin and Filth in Medieval Culture: The Devil in the Latrine* (New York: Routledge, 2012).
 - 3 Harvey, *Scenting Salvation*, 18–21.
 - 4 *Ibid.*, 6.
 - 5 Roch, *L'intelligence d'un sens*, 494–517.
 - 6 Harvey, *Scenting Salvation*, 12.
 - 7 Roch, *L'intelligence d'un sens*, 105.
 - 8 “[D]émonstration de la vertu du mourant, ou de la réalité de ses perceptions privilégiées, signe de présences célestes, ou de la la réalité de la résurrection corporelle.” *Ibid.*, 111.
 - 9 Gregory the Great, *Dialogues*, IV.49, ed. Adalbert de Vogue, trans. Paul Antin, Vol. 3, *Sources chrétiennes* 265 (Paris: Éditions du Cerf, 1980), 170–71.
 - 10 Roch, *L'intelligence d'un sens*, 84.
 - 11 “We ðe gelyfað cristes æriste, we cumað gewislice to his byrgene mid deorwurðre sealfe [g]if we beoð gefyllede mid bræðe haligra mihta, 7 gif we mid hlisan godra weorca urne drihten secað.” Ælfric, *Ælfric's Catholic Homilies: The First Series*, ed. Peter Clemoes (Oxford: Oxford University Press, 1997), 302.
 - 12 *Enoch autem, qui translatus est et mortem non uidet, carbunculus quidam est lapis boni odoris, quem operibus suis sanctus Enoch deo detulit gratiam quandam factis et moribus spirans.* Ambrose, *De paradiso*, III.23, in *Sancti Ambrosii Opera* pt. 1, CSEL 32, ed. C. Schenkel (Vienna: Tempsky, 1896), 279. My translation with consultation of Ambrose, *Paradise*, III.23, in *Saint Ambrose: Hexameron, Paradise, and Cain and Abel*, trans. John Savage (New York: Fathers of the Church, 1961), 300–01.
 - 13 *Ibid.*, III.15, 274.
 - 14 William of Malmesbury, *Gesta Regum Anglorum*, Vol. 1, ed. and trans. R.A.B. Mynors, R.M. Thomson, and M. Winterbottom (Oxford: Clarendon, 1998), II.216, 398–401.
 - 15 Peter Damian, *Letters 91–120*, Vol. 5, letter 113, trans. Owen J. Blum (Washington, D.C.: Catholic University of America Press, 1998), 286–87; *Vidi siquidem paradisum quatuor Evangeliorum fluentis irriguum, imo totidem spiritualium rivis exuberare*

virtutum: vidi hortum deliciarum diversas rosarum ac liliorum gratias germinantem, et mellifluas aromatum ac pigmentorum fragrantias suaviter redolentem, ut de illo vere valeat Deus omnipotens dicere: "Ecce odor filii mei sicut odor agri pleni, cui benedixit Dominus (Gen. xxix)." Et quid aliud Cluniacense monasterium, nisi agrum Domini plenum dixerim, ubi velut acervus est coelestium segetum, chorus tot in charitate degentium monachorum? (Peter Damian, *Epistolarum Libri Octo*, in PL 144, bk. 6, letter 4, col. 374C).

- 16 Roch, *L'intelligence d'un sens*, 221–23; Gregory of Tours, *Historia Francorum*, IX.6, 417–20.
- 17 Raine defines *lacissa* as equivalent to *canis*, noting that “[i]t is probably a corruption of *Lycisca*, the wolf-dog of Virgil.” I have translated it as “she-wolf” because Reginald uses the term *canicula*, “bitch,” to describe Helisend later. Reginald of Durham, *Libellus de admirandis beati Cuthberti*, ed. James Raine (London: J.B. Nichols, 1835), 333.
- 18 *[E]t talibus allocutum vocibus acrius arguendo corripuit. “Vade,” inquit, “quam citius, et lacissam illam, quae ecclesiae meae limina progrediendo foedavit, sub festinatione projiciendo expelle; foetoris enim ejus spurcicia per orbita ecclesiae meae progreditur, fumoque pectoris illius aula meae quietis lesa coinquinatur. Nec quietis requiem in loco pacis meae habere hic valeo quamdiu lacissae ipsius immunditiae odorem sentio. Unde quam maturius eam quaerendo progredere, lacissamque illam, omnis immunditiae contagione foetentem, de ecclesiae meae abjiciendo finibus expelle. Non enim ipius praesumptionis insidiae temerariae latere me poterant, quae mox ad sui introitum cuncta ecclesiae meae interioris aera foetoris suae nubibus circumquaque consperserat.”* Ibid., ch. 74, 153.
- 19 *“Pro dolor” inquit “tunc es illa lacissa pectoris, canicula spurciciae putredinis, nubes iniquae bajulationis, caligo fuliginis, umbra foetoris, discipula [sic] iniquitatis, laqueus foeditatis, cloaca corruptionis? Num quid tu furiosa Dei sanctuarium praesumendo prophanasti, loca sancta et nitida polluisti, Beatum Cuthbertum, Dei contemplatione soporatum, in-inquietando [sic] suscitasti, caelestibus impeditum negotiis fatigando incurmare praesumpsisti? Vere tu es, quae sacris ipsius naribus foetoris putredinem ingessisti, et hanc beatitudinis aulam spurciciae immunditiae inquinasti.”* Manuque eam corripiens, de ecclesia projiciendo extraxit. Ibid.
- 20 Sulpicius Severus, *The Life of St. Martin*, ch. 24, in Sulpicius Severus: *The Complete Works*, trans. Richard J. Goodrich (New York: Newman Press, 2015), 50; Sulpicius Severus, *Vita Sancti Martini*, in *Opera*, CSEL 1, ed. C. Halm (Vienna, 1866), ch. 24, 134.
- 21 Sulpicius Severus, *The Life of St. Martin*, trans. Goodrich, ch. 24, 51; *statim ut fumus euanit et cellulam tanto foetore conceplevit, ut indubia indicia relinqueret diabolum se fuisse* (Sulpicius Severus, *Vita Sancti Martini*, ch. 24, 134).
- 22 See ch. 23 of the *Vita* for a similar account of a demon dressed in purple who fears that Martin will see through his disguise and therefore refuses to go before him.
- 23 *[I]gnium vaporibus fetor incomparabilis cum eisdem vaporibus ebulliens omnia illa tenebrarum loca replebat.* Bede, *Bede’s Ecclesiastical History of the English People*, V.12, ed. and trans. Bertram Colgrave and R.A.B. Mynors (Oxford: Clarendon, 1969), 490–91. All translations of Drythelm’s vision are my own with consultation of Colgrave and Mynors’s translation.
- 24 *[C]ircumdederunt me, atque oculis flammantibus et de ore ac naribus ignem putidum efflantes angebant.* Ibid., 492–93. Note that *angebant* can also mean choke or strangle, which intensifies the depiction of a putrid odor.

- 25 *[B]alnea pice et sulphure cum fetore horrifico*. Adam of Eynsham, *Vision of the Monk of Eynsham*, ch. 16, in *The Cartulary of the Abbey of Eynsham*, Vol. 2, ed. H.E. Salter (Oxford: Clarendon, 1908), 305.
- 26 *[Q]uod nebulam fetoris indicibilis iugiter exalabat*. *Ibid.*, ch. 17, 307.
- 27 *[C]um fumo et fetore tartareo*. *Ibid.*, ch. 41, 347.
- 28 *Tegebat autem superiora illius campi chaos quiddam horrificum, quo permixtim rotabantur fumus sulfureus, nebula fetoris immensi*. *Ibid.*, ch. 24, 323.
- 29 *[N]aribus ignem spirantes execrabilem*. *Ibid.*
- 30 *Vermes autem dirupti et mortui ac per frusta comminuti sub infelicibus in congeriem glomerabantur. Hii tabe putredinis et fetore tam execranda tabis adeo universa replebant, ut feculentia illa omnem predictarum penarum excederet cruciatum*. *Ibid.*, 324.
- 31 *[Q]uia obscenitatis enormitas et tormentorum ac fetoris immanitas nimium michi tedium ingerebat simul et horrem. Fetorem tamen, sicut nec aliarum penarum lesionem, per experientiam non sensi, nec enim si sensissem, uiuere ulterius potuissem, ut michi uidebatur: immo intellectualiter in mente horum omnium intolerabilem magnitudinem satis perpendi*. Adam of Eynsham, *Vision*, ch. 25, 325.
- 32 Ælfric, *Ælfric's Catholic Homilies*, ed. Clemoes, 239. Bayless also cites this sermon in *Sin and Filth*, 115.
- 33 Innocent III, *De Miseria Humane Conditionis*, ed. Michele Maccarrone (Lugano, Switzerland: Thesaurus Mundi, 1955), I.1, 8; I.3, 10.
- 34 *Ibid.*, I.3, 10.
- 35 *Ibid.*, I.6, 13–14; II.21, 55; II.25, 58; III.4, 80; III.8, 83–84.
- 36 Innocent III, *On the Misery of the Human Condition*, ed. Donald R. Howard, trans. Margaret Mary Dietz (New York: Bobbs-Merrill, 1969), II.25, 51; *pluit Dominus a Domino, videlicet a seipso, non imbrem vel rorem, sed sulphur et ignem, sulphur super fetorem luxurie, ignem super ardorem libidinis, quatinus pena similis esset culpe* (Innocent III, *De Miseria Humane Conditionis*, II.25, 58).
- 37 Innocent III, *On the Misery*, ed. Howard, trans. Dietz, I.6, 11; *Concipit ergo cum immunditia et fetore* (Innocent III, *De Miseria Humane Conditionis*, I.6, 13–14).
- 38 See Chapter 3 of this book.
- 39 Agostino Paravicini-Bagliani, *The Pope's Body*, trans. David S. Peterson (Chicago: University of Chicago Press, 2000), 186–88.
- 40 *Ibid.*, 179, 326–27.
- 41 Bayless, *Sin and Filth*, 108–09.
- 42 *Ibid.*, 109.
- 43 Roch, *L'intelligence d'un sens*, 195–247.
- 44 *Ibid.*, 84.
- 45 *Ibid.*, 84–88.
- 46 *[H]aec putida haeresis tabes*. Gervase of Canterbury, *The Historical Works of Gervase of Canterbury*, Vol. 1, ed. William Stubbs (London: Longman, 1879), 270.
- 47 R.I. Moore, “Heresy as Disease,” in *The Concept of Heresy in the Middle Ages (11th–13th C.)*, ed. W. Lourdaux and D. Verhelst (Louvain, Belgium: Leuven University Press, 1976), 3.
- 48 Adam of Eynsham, *Vision*, ch. 24, 324. See also note 31 above.
- 49 Gervase of Canterbury, *The Historical Works*, 1:270.
- 50 *[A]bsorbu it fluvium et “non mirabitur” ex iniquae praesumptionis audacia*. *Ibid.*
- 51 *[T]errae meae nobiliores, jam praelibata infidelitatis tabe, aruerunt*. *Ibid.*, 270–71.
- 52 Harvey, *Scenting Salvation*, 158–62.

- 53 Paul Gavrilyuk and Sarah Coakley, Introduction to *The Spiritual Senses: Perceiving God in Western Christianity*, ed. Paul Gavrilyuk and Sarah Coakley (Cambridge: Cambridge University Press, 2012), 11.
- 54 Peter Damian, *Letters 151–180*, Vol. 7, letter 174, trans. Blum (Washington, D.C.: Catholic University of America Press, 2005), 267; *Nam velut in quinque portarum civitate consistimus, dum in corpore, quod quinque sensibus cingitur, habitamus. His ergo portis seras apponimus, his repagula, vectes ac pessulos adhibemus, cum sensuum nostrorum aditus a vitiis irruentibus ac mundi vanitatibus sollicitè custodimus* (Peter Damian, *Epistolarum Libri Octo*, in PL 144, bk. 4, letter 14, cols. 325–26).
- 55 Peter Damian, *Letters 151–180*, Vol. 7, letter 174, trans. Blum, 268–71; Peter Damian, *Epistolarum Libri Octo*, in PL 144, bk. 4, letter 14, cols. 326–37.
- 56 Robert J. Hasenfratz, ed., *Ancrene Wisse* (Kalamazoo: Western Michigan University, 2000), pt. 2, ll. 4–7.
- 57 Alain of Lille, *Anticlaudianus, or The Good and Perfect Man*, bk. 4, trans. James J. Sheridan (Toronto: Pontifical Institute of Mediaeval Studies, 1973), 122–23; Alain of Lille, *Anticlaudianus*, bk. 4, ll. 138–58, ed. R. Bossuat (Paris: Librairie Philosophique J. Vrin, 1955), 111.
- 58 Alain of Lille, *Anticlaudianus*, trans. Sheridan, bk. 4, 120; *cogitque iugo seruire iugales / Indomitos* (Alain of Lille, *Anticlaudianus*, bk. 4, ll. 86–87, 109).
- 59 Harvey, *Scenting Salvation*, 99.
- 60 Gavrilyuk and Coakley, Introduction to *The Spiritual Senses*, 7.
- 61 [*Q*]uid tanquam vaporeum surgit ad nares? Augustine, *Ennarratio en psalmum*, Psalm 41, pt. 7, in PL 36, ed. Migne (Paris, 1865), col. 468. See also *Confessions*, Vol. 1, ed. James J. O'Donnell (Oxford: Clarendon, 1992), X.32, 138: *De inlecebra odorum non satago nimis. cum absunt, non requiro, cum adsunt, non respuo, paratus eis etiam semper carere.*
- 62 R.W. Sharples and P.J. Van der Eijk, Introduction to *Nemesius: On the Nature of Man*, ed. and trans. R.W. Sharples and P.J. Van der Eijk (Liverpool: Liverpool University Press, 2008), 1.
- 63 See Chapter 1, note 28. To further illustrate the muddy distinction between philosophy and theology, during the central and late Middle Ages, Nemesius's work was believed to have been written by another bishop, Gregory of Nyssa, who had written on the spiritual senses.
- 64 Harvey, *Scenting Salvation*, 114–18.
- 65 Roch, *L'intelligence d'un sens*, 87–101. He also notes that he commonly found *fumus* and *vapor* as words related to odors in his early medieval sources. Some of the uses of *fumus* and *vapor* alongside odor are in the Vulgate, while others appear in the works of authors such as Cassiodorus and Gregory of Tours or in saints' lives (487–49). The use of these words to describe odors may indicate some survival of ancient philosophical concepts, whether the authors of texts were fully conscious of them or not. However, their use in the Vulgate must have prompted repetition by authors with little or no awareness of the philosophical tradition.
- 66 Gavrilyuk and Coakley, Introduction to *The Spiritual Senses*, 4–5.
- 67 [*P*]er lepram luxurie peccatum designatur ... quia consumit totum hominem ... aufert ... oculos intelligencie ... aures obediencie nares discrecionis capillos bone cogitacionis barbam fortitudinis supercilia sancte indignacionis manus bone operacionis pedes sancte affecionis linguam confessionis oracionis et predicacionis ... Quoted in David McDougall, "Studies in the Prose Style of the Old Icelandic and

- Old Norwegian Homily Books” (University College London PhD dissertation, 1983), 378; British Library MS Add. 21253. Also cited in G.R. Owst, *Preaching in Medieval England: An Introduction to Sermon Manuscripts of the Period c. 1350–1450* (Cambridge: Cambridge University Press, 1926), 326.
- 68 See A. Mark Smith, *From Sight to Light: The Passage from Ancient toward Modern Optics* (Chicago: University of Chicago Press, 2014), 291–97.
- 69 The full verse is, “Your neck is like a tower of ivory. Your eyes like the fishpools in Hesebon, which are in the gate of the daughter of the multitude. Your nose is like the tower of Lebanon that looks towards Damascus.” However, medieval commentators usually broke the verse into three parts for explication.
- 70 Patrick J. Gallacher, ed., *The Cloud of Unknowing* (Kalamazoo: Medieval Institute Publications, 1997), note on ll. 1936–37; Ann W. Astell, “A Discerning Smell: Olfaction among the Senses in St. Bonaventure’s *Long Life of St. Francis*,” *Franciscan Studies* 67 (2009): 106–08.
- 71 Pseudo-Dionysius, *The Celestial Hierarchy*, in Luibheid and Rorem, *Pseudo-Dionysius: The Complete Works*, 185.
- 72 E.g., Harvey, *Scenting Salvation*, 126, 179.
- 73 Origen, *Dialogue of Origen with Heraclides and his Fellow Bishops on the Father, the Son, and the Soul*, in *Origen: Treatise on the Passover and Dialogue of Origen with Heraclides and his Fellow Bishops on the Father, the Son, and the Soul*, ed. and trans. Robert J. Daly, *Ancient Christian Writers* 54 (New York: Paulist Press, 1992), 72.
- 74 Jean Leclercq, “Influence and Noninfluence of Dionysius in the Western Middle Ages,” in Luibheid and Rorem, *Pseudo-Dionysius: The Complete Works*, 26–30.
- 75 E. Ann Matter, *The Voice of My Beloved: The Song of Songs in Western Medieval Christianity* (Philadelphia: University of Pennsylvania Press, 1990), 12, 26.
- 76 Philo of Carpasia, *Ennarratio in Canticum Canticorum ex editione Andreae Gallandi*, in PG 40, cols. 127–28.
- 77 Theodoret of Cyrus, *Interpretatio in Canticum Canticorum*, IV.7 in PG 81, col. 191; Ambrose, *Commentarius in Cantica Canticorum e Scriptis S. Ambrosii collectus*, in PL 15, cols. 1948–49; Apponius, *In Canticum Canticorum Expositionem*, ed. B. de Vregille and L. Neyrand, CCSL 19 (Turnholt, Belgium: Brepols, 1986), 250.
- 78 Mark DelCogliano, ed., *Gregory the Great: On the Song of Songs* (Collegeville: Liturgical Press, 2012), 243.
- 79 Gregory the Great, *Regulae Pastoralis Liber*, ed. Henry Ramsden Bramley (Oxford: J. Parker, 1874), I.11, 40, 42; Gregory the Great, *Regulae Pastoralis Liber*, III.32, 358; Gregory the Great, *Homiliarum in Ezechielem*, I.11.7, in PL 76, cols. 908–09; Gregory the Great, *Moralia in Job*, Vol. 3, VI.31.44, in PL 76, cols. 619–20.
- 80 [N]aso quippe odores foetoresque discernimus. Recte ergo per nasum discretio exprimitur, per quam virtutes eligimus, delicta reprobamus. Gregory the Great, *Regulae Pastoralis Liber*, ed. Henry Ramsden Bramley (Oxford: J. Parker, 1874), I.11, 40. All translations from this text are my own, with consultation of Gregory the Great, *Pastoral Care*, trans. Henry Davis (Westminster, MD: Newman, 1950).
- 81 *Parvo autem naso est, qui ad tenendam mensuram discretionis idoneus non est. Sed sunt nonnulli, qui dum aestimari hebetes nolumt, saepe se in quibusdam inquisitionibus plus, quam necesse est, exercentes, ex nimia subtilitate falluntur. Unde hic quoque subditur: “Vel grandi et torto naso.” Nasus enim grandis et tortus est discretionis subtilitas immoderata, quae dum plus quam decet excreverit, actionis suae rectitudinem ipsa confundit.* Gregory the Great, *Regulae Pastoralis Liber*, I.11, 40, 42.

- 82 [S]ervetur veritas praedicandi, teneatur necesse est altitudo vivendi. Gregory the Great, *Homiliarum in Ezechielem*, cols. 908–09; Gregory the Great, *Homilies on the Book of the Prophet Ezekiel*, trans. Theodosia Tomkinson (Etna: Center for Traditionalist Orthodox Studies, 2008), 217.
- 83 [Q]uia videlicet praepositorum discretio et munita semper debet esse circumspicione, et in altitudine vitae consistere, ide est in valle infirmi operis non jacere. Sicut enim turris in monte idcirco ad speculandum ponitur, ut hostes qui veniunt longius videantur, sic praedicatoris vita semper in alto debet fixa permanere, ut more narium discernat fetores vitiorum odoresque virtutum. Incursus malignorum spirituum longe prospiciat, et commissas sibi animas per suam providentiam cautus reddat. Gregory the Great, *Homiliarum in Ezechielem*, cols. 908–09; Gregory the Great, *Homilies*, trans. Tomkinson, 217.
- 84 Matter, *The Voice of My Beloved*, 14.
- 85 Quia per nasum odores solent fetoresque discerni dispensatores verbi Dei ... designati ... causa saluberrimae discretionis quae a patribus mater esse virtutum probatur designantur in naso quia nimirum quasi per olfaciendi officium ceteris amplius dinoscere sufficiunt in quibus actibus sive sermonibus bonus odor Christi flagret qui vero letiferum pravitatis exhalent fetorem; nam et multum sollicita sive doctor seu quisque fidelis discretionem opus habet ne se forte vitia sub virtutum habitu pallient. Bede, *In Cantica Canticorum*, bk. 4, 323–24; Bede, *On the Song of Songs and Selected Writings*, trans. Arthur Holder (New York: Paulist Press, 2011), 205–06.
- 86 Alcuin, *Compendium in Canticum Canticorum*, in PL 100, col. 660; Haimo of Auxerre [of Halberstadt], *Commentarium In Cantica Canticorum*, in PL 117, col. 344; Robert of Tombelaine [Gregory the Great], *Expositio Super Cantica Canticorum*, in PL 79, cols. 534–35; Honorius Augustodunensis, *Expositio in Cantica Canticorum*, in PL 172, col. 459; Nicholas of Lyra, *The Postilla of Nicholas of Lyra on the Song of Songs*, trans. James Kiecker (Milwaukee: Marquette University Press, 1998), 104–05.
- 87 Gratian, *Decretum*, dist. 49 in *Corpus Iuris Canonici*, pt. 1, ed. Aemilius Friedburg (Leipzig, 1879), 143.
- 88 Nasus in divina pagina discretionem significat. Sex Sermones ad Populum, in PL 147, col. 226.
- 89 Bruno of Segni, *Tractatus de Sacramentis Ecclesiae*, in PL 165, col. 1101.
- 90 Catherine Cavadini, “The *Commercium* of the Kiss Who Saves: A Study of Thomas the Cistercian’s Commentary on the Song of Songs” (University of Notre Dame PhD dissertation, 2010), 2.
- 91 [U]t ... habeto nasum, pete a Deo spiritum discretionis ad rationis illuminationem. Thomas the Cistercian, *In Cantica Canticorum*, in PL 206, col. 717C.
- 92 [S]piritus ad boni et mali discretionem. Ibid., cols. 717D–18A.
- 93 Item nasus purgat capitis humorem, ministrat animae respirationem, habet odorum discretionem. Purgat capitis humorem, id est animam quae est caput nostrum, mundat a peccatis. Dat animae respirationem ut exeat et occupetur aliquando in temporalibus ordinandis, aliquando interius vacet coelestibus me itandis. Habet odorum discretionem, quia apud se tractat virum commode vel incommode agat de omnibus istis. Ibid., col. 718. The phrase *me itandis* makes little sense, and it is possible there is a missing letter between the words, but I have not located a printing of PL that reads differently.
- 94 Cf. Constantine, *Pantegni*, III.15, 11v.

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6 The sense of smell of discretion

Medically aware olfactory theology in the later Middle Ages

The spiritual sense of smell had three essential parts: the good odor of sanctity, the fetid stench of sin, and the nose that discerned between the two extremes. Much of the theology of smell reached medieval Europe from the early Christian Mediterranean. However, beginning at the end of the twelfth century, scholastic theologians with knowledge of Galenic-Arabic and Aristotelian olfactory theory imported current philosophical and medical opinions into theology, complicating the spiritual sense of smell. Good and bad spiritual fragrances gained the power to nourish or harm the soul, just as physical good and bad odors healed or harmed the spirits. Spiritual odor began to be described metaphorically with the language of medicine and complexion. In medicine, good odor was healing and pleasant to the spirits of the body, and a pleasant smell indicated healing substances and air of good complexion. The significations of theological good odor, the odor of sanctity, were similar but concerned the soul within the body and God's influence both inside and outside of the individual. Likewise, in medical terms, bad odor both caused and indicated physical illness because of its imbalanced complexion. Correspondingly, in theology, the stench of sin provided evidence of a sick soul that might spread its malign influence to others. Those with strong spiritual perception were able to judge the qualities of human souls by their odors, just as physicians judged the qualities of medicine.

From the thirteenth century on, aspects of medical thought were purposefully included in discussions of spiritual odors or smelling in preaching texts, including both exempla collections and sermons, and especially in those by Dominican authors. These texts adapted traditional ideas such as the association of roses or lilies with martyrs and virgins, and further explained their compatibility as symbols by appealing to their medical qualities. Late medieval authors also solidified the spiritual powers of the sense of smell under the name "nose" (*nares*) or "sense of smell of discretion" (*odoratus discretionis*), which was the most common but not the only late medieval metaphor of spiritual olfaction. Scholastic theologians may have considered a spiritual sense or sense organ necessary in order for Christians to receive spiritual odor. Indeed, the olfactory sense organs in the brain were also sometimes integrated into the spiritual sense of smell. By including such information in preaching texts, the

authors communicated advanced scholastic knowledge to lay audiences. The absorption of this combined theological and philosophical thought about the sense of smell is traceable in vernacular literature, especially in works of mysticism.

Medically aware olfactory theology in preaching texts

The powers of the nose to sense spiritual odors such as the odor of sanctity, the stench of sin, and the aroma of virtue and good works became integrated with medical and philosophical theories of olfaction in the central and late Middle Ages. Some of this integration was initiated by the same scholars who wrote philosophical and medical texts. The twelfth-century authors Adelard of Bath, William of St.-Thierry, and William of Conches fused religion and philosophy in their texts on the body and soul. The thirteenth-century encyclopedists Vincent of Beauvais and Bartholomew the Englishman also used theological and philosophical sources together. Furthermore, Latin theology, including mysticism, incorporated aspects of scholastic smell theory into spiritual smell theory. In *Itinerarium mentis in Deum*, Bonaventure (1221–74) links the sense objects of all five senses with the four elements. He explains that the sense object of smell is *vaporabilia*, vaporous things, noting that they “contain something of the nature of water, air, and fire or heat, as is clear from the aroma produced by spices.”¹ Bonaventure’s Galenic-Arabic explanation of the nature of odor does not feature in his discussion of spiritual smell, in which he makes smell the longing for God.² However, his summary of the sense objects is reminiscent of the brief discussions of the philosophy of the senses in twelfth-century works.

The sources that do not typically include theological speculation in their discussions of olfaction are thirteenth-century and later philosophical, medical, or scientific works intended for other experts, such as those of Albertus Magnus, Peter of Spain, and Pietro d’Abano. However, the theological works of later medieval authors of philosophical and scientific texts do bring philosophy and medicine into theology. For example, Albertus Magnus mentions the sense organs of smell as part of his discussion of the spiritual senses in his *Sentences* commentary. He also makes use of the nature of odor to describe how the spiritual senses perceive God. He explains that the spiritual senses perceive either God’s goodness or his truth. Touch and taste perceive God’s goodness, while only taste perceives the complexion of God. The other senses perceive truth, but in two ways. One is truth for the purpose of truth and the other is truth for the purpose of goodness. Spiritual smell, linked as always with taste, perceives the second variety of truth. Odor is the evaporated flavor of God’s goodness; therefore, it indicates the truth of God’s goodness (in other words, something of God’s complexion) from a distance.³ Although Albertus does not always bring his philosophical knowledge into theological discussions, clear references to aspects of the philosophy of olfaction are scattered throughout his theological works, in

addition to various aspects of traditional olfactory theology that align well with contemporary philosophy.⁴

Physicians who were not officially employed to discuss theology also sometimes wrote spiritual explications of medicine. For example, Joseph Ziegler shows that Arnau de Vilanova (1235–1311) turned to theology later in life and employed medical metaphors in his discussions.⁵ In his early fourteenth-century *Ars catholicae philosophiae*, Arnau urges the necessity of protecting the Church from “pestilential” men, who are agents of the Antichrist trying to spread their poison to corrupt Christians. Just as doctors judge the health of bodies based on their complexion, God teaches the leaders of the Church to judge souls.⁶ Pestilential people must be located and removed, because they will infect the weak members of the Church by intentionally sinning against God. However, it is important to distinguish between pestilential people and those who are merely sick because of a bad complexion, which means the sinners are ignorant of how they should act or are weak to the urges of the body.⁷

It is difficult to identify precisely what information may have reached popular audiences and how far it spread. There are tantalizing hints that the late medieval laity, at least in cities, had access to more scholastic knowledge than is generally credited to them. Chaucer’s frequently cited lines on the Physician in the General Prologue to the *Canterbury Tales* (1388–1400) suggest that medical manuals and textbooks were not unknown among educated laymen. Among the authors that Chaucer’s Physician, and therefore Chaucer and likely a portion of his audience, was familiar with are several of those examined here for their contributions to the discussion of olfaction: Haly Abbas, Galen, Avicenna, Averroes, and Constantine the African.⁸ Furthermore, as Demaitre notes, Chaucer also cites three authors of relatively recent medical compendia: Bernard de Gordon, John of Gaddesden, and Gilbert the Englishman.⁹ Similarly, the anonymous Roman-dialect chronicle of current events in Rome that includes the *Life of Cola di Rienzo* (c. 1358), written by a wealthy member of the laity who had studied medicine at Bologna and could read and write in Latin, communicates to vernacular readers information about the powers of the sense of smell ultimately drawn from Avicenna. The audience, which the author himself defines as common merchants, learns about multiplication of species in the air that allows intentions such as odor to travel over long distances, so that vultures can even sense the odor of dead bodies from 500 miles away.¹⁰

While literary texts such as these certainly communicated some scholastic thought about smell to vernacular audiences, they were limited to readers or listeners of their language. Sermon collections, however, were usually composed in Latin, and selected sermons were given throughout Europe in vernacular languages. Preaching texts were important vehicles for both blending and broader communication of integrated theological and philosophical discussions of smell. Sermons were perhaps the most accessible form of scholastic philosophy, medicine, and theology because they were, for the

most part, designed to be orally communicated to a non-expert audience. Furthermore, the incorporation of scholastic philosophy into sermons was far from unusual. Siegfried Wenzel notes that Bartholomew the Englishman's *De proprietatibus rerum* was a frequent source of information for English sermons between c. 1350 and c. 1450.¹¹ Sermons within this time frame also cite Greek and Arabic authorities, including Galen and Avicenna, as well as medieval Christian thinkers such as Roger Bacon, Albertus Magnus, and Thomas Aquinas.¹² Medical topics were common as well. Wenzel cites a group of four sermons that take medicine as their theme: "Bodily medicine, if taken by a person with the right complexion, is helpful, otherwise it can be fatal. Thus the Eucharist can be healthy only for the right complexion. The latter can be improved by penance."¹³ This theme suggests some medical knowledge on the part of the audience—namely, that a medicine had to be matched to the complexion of the patient. Even if the audience was not aware of that facet of medicine before they heard the sermon, they certainly understood a little about medicine after hearing it.

Collections of exempla and sermons from the mid-thirteenth century onwards illustrate the introduction of scholastic theories of smell into theology as it was preached. Jacobus de Voragine (c. 1230–98/99), the author of the *Legenda aurea*, frequently uses the language of spiritual odor in his sermons on the Virgin and on Lent. There are also a few examples of medically aware olfactory theology in the *Legenda aurea*. Medically aware theology increased in preaching texts of the fourteenth century: Ziegler demonstrates that clerical authors of exempla collections and sermons in the first half of the fourteenth century who were not trained as doctors sometimes employed the metaphors of medical theory concerning certain body parts and illnesses to explain religious concepts.¹⁴ The fourteenth-century authors of preaching manuals Pierre Bersuire (c. 1290–1362) and Giovanni da San Gimignano (1260/70–after 1333) both make use of standard scholastic explanations of smelling, first to explain theories of olfaction and odoriferous medicines and then to morally reinterpret them.

The Italian Dominican Jacobus de Voragine composed several collections of model sermons that enjoyed immense popularity through the end of the Middle Ages and beyond.¹⁵ Although, as Eliana Corbari points out, "his sermons rarely cite Aristotle, and never refer to major contemporary Dominican exponents of Aristotelian philosophy, such as Albert the Great (d. 1280) or Thomas Aquinas (d. 1274)," both the *Sermones quadragesimales* and the preaching resource *Liber Mariale* contain some basic philosophical and, in particular, medical content regarding the sense of smell and odors that Jacobus interprets spiritually to support the main arguments of his sermons.¹⁶

The *Liber Mariale* is a text designed as a reference for preachers, although it is perhaps not a traditional sermon collection.¹⁷ By far the most common type of reference to physical olfaction in the *Liber Mariale* is the medical interpretation of a spice or a flower. Jacobus's explications range from a brief and simple listing of the qualities of a medicine to a more detailed description

of its medical uses. An example of a simple description is part of his list of the six delights of Mary in this world as identified by Bernard of Clairvaux. He explains the first three delights with the odor of nard, citing Sg 1:11, "While the king was at his rest, my nard gave off its odor." The king is Christ, who rested in the lap of the Father, in the Virgin's womb, and on the cross. Nard, he explains, "is a humble, odoriferous, and hot plant. Because it is humble, it signifies her humility. Because it is odoriferous, it signifies her virginity. Because it is hot, it signifies her charity."¹⁸ When Christ was with the Father, Mary's humility gave her a pleasant spiritual odor, which led to her pregnancy, at which time her virginity gave off an odor. Finally, her charity when Christ was on the cross smelled good to God.¹⁹ Here, Jacobus cites one of the medical qualities of nard besides odor: its heat. On the same aromatic and the same Bible verse in another sermon, this time on Mary's humility, Jacobus goes into more detail about the medical qualities of nard, saying that "nard is a small, odoriferous plant and a purgative of the chest."²⁰ Its small size indicates Mary's humility because she knew she was God's servant. Its odor indicates her delight when she became pregnant and spiritually married Christ. Finally, her humility purges sin from the chests of humanity.²¹

Although Jacobus is not much concerned with the specific powers of the odor of nard, his spiritualizations of aromatic medicines do sometimes refer specifically to healing odors. In comparing Mary to the aromatic resin galbanum, he argues that it is an appropriate symbol of her because it is

totally odoriferous. "The odor of your unguents surpasses all aromatics" (Sg 4:10) because its odor strengthens the heart against the blows of troubles like cinnamon, protects against the putridity of sins like balsam, and puts the fumes of temptations to flight like myrrh.²²

The odor of galbanum spiritually strengthens the heart during difficult times just as cinnamon physically strengthens the heart's spirits, protects the soul from putrefying sin in the same way balsam protects bodies from rotting, and drives away temptations just as myrrh drives away worms. He also points out that the virtues of galbanum as an aromatic—cleansing wounds, making snakes flee, healing cold sicknesses, and relieving the falling sickness—are like Mary's power to heal the wounds of sin, put demonic temptations to flight, inflame souls with the love of Heaven, and alleviate avarice, which is like the falling sickness.²³

He gives even more detail of the powers of odor when he compares Mary to cinnamon. He begins by asserting that cinnamon is hot, dry, and aromatic, assigning cleanness and purity as the significance of its aromaticity in Mary. He examines its spiritual significance by color, odor, and flavor and then by its finely textured substance and its virtues. Jacobus relates that cinnamon

is known by its odor, because it greatly strengthens the brain with its aromaticity and restricts its flow. Sense and movement proceed from the

brain. Therefore, the odor of the sanctity of blessed Mary strengthens the motive virtue while it entices it towards good actions. It strengthens the affective virtue while it inflames it towards love. It strengthens the intellective virtue while it illuminates it towards knowledge. That odor of her sanctity even restricts the flow of carnality, and therefore it is similar to the odor of frankincense, which has the power to restrict the flow of phlegm.²⁴

More than the other texts in the *Liber Mariale*, this one reveals Jacobus's reading of medical texts that discussed the qualities of aromatics. The sermon is arranged by the qualities used to identify medicines by medical professionals, and each one is given both a physical and a spiritual explanation. In the section on odor, he uses the same verb, *confortare*, that medical texts use to describe medicines that generally aid the health of a body part by strengthening it. In this way, he creates a deeper analogy between the medical and spiritual powers of cinnamon that his Latin-literate readers might have recognized.

The *Sermones quadragesimales* are model sermons for the time around Lent, during which sermons, preached twice a day instead of once, drew a larger attendance than other times of year.²⁵ Jacobus includes less medically and philosophically aware theology in this sermon collection but it is nevertheless present. In one sermon, he presents Christ's blood as a perfume that both delights the heart of God the Father and cures sins because its pleasant odor inclines God towards mercy.²⁶ Here, he appeals to general knowledge of the agreeableness of aromas to the heart and their healing abilities. In another, he asserts that the odor of Christ's fame is like the odors of cedar, myrrh, and vines. These odors make snakes, worms, and toads flee, and Jacobus compares them to Christ's poverty, humility, and purity. The serpents that flee the odor of cedar are symbolic of Christ's poverty removing avarice.²⁷ The odor of myrrh expels worms, which symbolize pride. Like worms that eat through bodies and objects, pride "gnaws all the merits in our soul."²⁸ In this case, Jacobus appeals to the powers of odors to repel various pests. These abilities of odors appear in a wide range of genres, including but not limited to philosophy and medicine.

One of the more medically aware sermons in the Lent collection is Jacobus's examination of the spiritual significance of leprosy. He contends that "leprosy is the most abominable illness of them all. It is a fetid, thirsty, and contagious illness."²⁹ The thirst of leprosy signifies avarice, while its contagious nature stands for pride, which likewise spreads from one person to another. The stench of leprosy spiritually indicates lust: "Leprosy, inasmuch as it is a fetid illness, signifies the sin of lust that stinks before God and men."³⁰ A lustful person stinks not from the time of a lustful thought or even after the first action on those thoughts but when he develops bad habits and sins continually. At that point, "the soul is both dead and fetid."³¹ People who refuse to mend their lustful ways are destined for Hell, which also stinks for four

reasons: the place itself smells bad because it is filled with all kinds of unclean things; God specifically inflicts the stench of sulfur on sinners in Hell; demons are fetid because they spend all their time with damned souls; and, finally, the bodies of the damned have a foul odor because of their sinfulness.³² Jacobus takes three medical aspects of leprosy as the basis of this sermon. However, he does not describe the illness in detail, laying his focus instead on spiritual interpretation.

The *Legenda aurea* is a preaching resource composed around 1260 that became one of the most popular works of the Middle Ages. Over 800 Latin manuscripts are still extant. By 1500, it had been printed more times than the Bible. It was also translated, sometimes shortened, into vernacular languages. Sherry L. Reames cites multiple versions in French, Spanish, Italian, English, Dutch, and German.³³ Reames argues that this preaching resource “seems to have been produced specifically, even exclusively, for use with an unsophisticated segment of the public, an audience quite distinct from both the clergy who would teach them and the educated laity assumed by Jacobus’s model sermons.”³⁴ While it is true that the stories in the *Legenda* included less learned information than the sermons, scholarly information is present. Furthermore, since the learned references are usually quite brief and unexplained, they would benefit from further explication if the examples were included in sermons.

The *Legenda* is full of traditional olfactory theology, particularly the good odors of holy relics and living saints. However, there are also examples of medically aware olfactory theology. Most of the references to spiritual smell in the *Legenda* involve odor rather than the sense organ. Jacobus does, however, explain the etymology of St. Apollinaris’s name with a cryptic reference to the nose of discretion that would certainly have required explanation to a lay audience if they were to understand it fully. He spuriously suggests that his name comes “from *apollo*, which means extraordinary, and *naris*, through which discretion is understood, meaning a man of extraordinary discretion.”³⁵ Nevertheless, most of Jacobus’s references to olfaction center on spiritual odor. He is clearly aware of the infectious nature of ordinary bad odor. In the story of Gregory the Great, he notes that the odor of a rotting mass of dead snakes infected the air in Rome and caused an outbreak of plague.³⁶ He also describes the stinking breath of a dragon that came out of a statue of Mars and “infected” the captors of St. Philip the Apostle “with the stench of its breath.”³⁷ A more spiritual example of the danger of bad odor is his report that St. James the Apostle was afraid to burn the magic books of a penitent necromancer “lest the odor of the fire trouble the unprotected by accident.”³⁸ He has them thrown into the sea instead.

If bad spiritual odors are infectious, good ones are healing. In the sermons on the Virgin, Jacobus frequently compares Mary’s purity or virginity to myrrh and cedar. For example, he explains in one sermon that, just as the odors of myrrh and cedar expel worms and snakes, “the odor of her virginity expelled beastly movements from the hearts of others.”³⁹ Similarly, in

the *Legenda*, he explains in his account of the feast of the Purification, or Candlemas, that no men ever desired Mary, even though she was beautiful, because her chastity was so powerful that it destroyed lust. For that reason, Mary was compared to cedar and myrrh, which were known to kill snakes and worms. Like these aromatics, Mary's holiness "killed the snaky movements of the flesh" in other people, including lust. Jacobus concludes that "the power of the Virgin's chastity penetrated the hearts of the libidinous so deeply that it immediately rendered them chaste."⁴⁰ Mary's ability to affect hearts is like the ability of odor to strengthen the heart.⁴¹

In the life of St. Dominic (1170–1221), the founder of his order, Jacobus provides a similar example of a healing odor. A lustful scholar came to the Dominican house for mass on a day when Dominic was celebrating it. During the offering,

the scholar went forward and kissed the saint's hand with deep devotion. When he kissed it, he sensed a perfume coming from the hand, an odor sweeter than any he had ever experienced in his life; and thereafter the heat of the carnal passion was marvelously cooled [*refriguit*] in him, to the point that the young man, who had been vain and lubricious, became continent and chaste. Oh, how great was the purity and cleanness that strengthened the body of him whose odor so wondrously purged away all dirt from a soul [*sordes mentis purgabat*]⁴²

Although Jacobus asserts in the account of the Purification of the Virgin that only her odor of virginity could clean lust from the souls of others, here Dominic has the same power. Although this story does not include many medical terms (with the exceptions of *refriguit* and perhaps *purgabat*), the healing power of the spiritual odor that cleanses the scholar's dirty mind is similar to the ability of physical odors to heal by rebalancing the body's complexion.

The preaching texts of Jacobus de Voragine include many examples of his spiritual interpretation of medical uses of smell. He does not usually provide much detail, although he includes enough in some places to demonstrate that he knew what he was referring to when his explanation is briefer. Because he was brief, the use of some of his scholastic examples in a sermon might have made it necessary for a preacher drawing on his texts to add more detail about a medical concept. Even if a preacher included nothing extra to one of Jacobus's sermons or exempla, he introduced concepts to his flock that the fourteenth-century authors Pierre Bersuire and Giovanni di San Gimignano covered in much more medical detail.

Pierre Bersuire, a Benedictine, has attracted attention mostly for his moralization of Ovid, which forms a book of the *Reductorium morale* (c. 1325–37) and is notable for its influence on Chaucer.⁴³ However, Bersuire also addresses natural philosophy and medicine, and he drew a large amount of that information from Bartholomew the Englishman's encyclopedia.⁴⁴ Bersuire moralizes all the basic philosophical and medical information about the sense of smell,

including the anatomy of olfaction, the natures of good and bad odors, and the illnesses that might disrupt the sense of smell. In each case, he summarizes Bartholomew's comments on the topic and then explains their moral interpretation. Throughout his discussions of olfaction, which span several books, the spiritual ability of the nose is discretion between good and evil. He frequently uses the phrases "nose of discretion" and "sense of smell of discretion and devotion" to describe spiritual olfaction. Bersuire's moralized explanations of each essential medical aspect of the sense of smell allow him to expound on the spiritual virtue of discretion. In addition to communicating general spiritual messages, he uses the nose of discretion to highlight lack of discretion among the contemporary clergy, who he argues are outdone by the laity, especially the common people. Accordingly, the main spiritual odor that interests him is the odor of a good or bad reputation.

Just as Bartholomew's in *De proprietatibus rerum*, Bersuire's comments on olfaction are scattered throughout his work. However, his interpretation is cohesive. In each location where he introduces the sense organ, Bersuire begins with a medical discussion of how smelling occurs and then explains how the physical process of smelling is echoed spiritually in human discretion. For example, in the first chapter on smelling, he begins with an outline of the basic process of olfaction, from the evaporation of odor from an object into the air to the carrying of odor through the nostrils and into the brain for judgment by the soul. A good odor pleases the soul, while a bad odor harms it. In this way, the sense of smell is like the virtue of discretion, which

divides stench from good odor, that is, infamy from the good fame of others. The odor of fame is resolved from the substance of a person, that is, from their life and habits. It is mixed in the air, that is, in the nearby neighborhood, and it goes towards and is carried to the nostrils of our discretion or to our sense of smell. We are delighted [*delectamur*] by that odor if it is good, and we are induced towards good deeds by the example and are strengthened [*confortamur*]. If it is bad, we are disturbed and infected [*inficimur*] by such an example, and we are weighed down [*gravamur*].⁴⁵

This passage is the briefest statement of Bersuire's theory of spiritual smell. The spiritual sense of smell's purpose is discretion between two opposed spiritual odors. Bersuire almost always discusses them not as the heavenly odor of sanctity and the infernal stench of sin but as the more pastorally focused odor of fame, which is always good, and stench of infamy, which is bad. These two spiritual aromas refer not only to the actions of individual Christians but to the recognition of their behavior by the Christian community. The odors themselves mean nothing until they are mixed with air (i.e., circulate the neighborhood), and reach the spiritual nose of a person's neighbors, who then act according to the example of the odorous person. Furthermore, the effects of spiritual odors on the soul are the same as those of physical odors on the

body: physical odors, like Bersuire's spiritual ones, strengthen (*confortare*) the body if they are good and infect it (*inficere*) and weigh it down (*gravare*) if they are bad.

In his discussions of the anatomy of smelling, Bersuire draws more parallels between the sense organ and discretion. He typically presents olfactory anatomy as a symbol of *virtutem prudentiae et discretionis* (the virtue of prudence and discretion) that distinguishes good from evil without the more specific insistence on good or bad behavior and reputation.⁴⁶ Echoing Bartholomew the Englishman's citation of Isidore of Seville's etymology of *nares*, Bersuire introduces the anatomy of smelling by explaining that *nares* derives from *gnare*, to know, because the role of the nostrils is to discern between odors. For the same reason, people who are ignorant, *ignari*, are said to be without a nose. He adds his own interpretation to Isidore's etymology by adding that the ignorant are noseless because they do not use their discretion properly.⁴⁷

Rather than beginning and ending with distinguishing good from evil, the sense of smell of discretion as Bersuire envisions it includes both internal and external nasal anatomy. He explains that there are two holes at the back of the nose, one that goes towards the palate in the mouth and is for draining superfluities and one that goes towards the brain for the operation of the sense of smell. These anatomical features are mirrored by two interior holes in the spiritual nose. In an argument similar to Thomas the Cistercian's, Bersuire asserts that the nose of discretion must consider both the body's fragility, which is signified by the hole that empties downwards towards the body, and the inherent nobility of the soul, which is signified by the hole that leads up to the brain.⁴⁸ With these two holes, the nose of discretion purges the soul and body of the superfluities of sin through confession. The spiritual sense organs themselves, the two pieces of breast-like flesh, primarily serve the soul. They signify worldly judges. These judges take in outside business (air) and make a decision about whether the case (an odor) is good or bad. Alternatively, the sense organs signify taking air, or work, up to the real judges, the brain and reason, which means that average Christians (figured as the nostrils) should seek judgment from wise men (the olfactory breasts) and accept their opinions.⁴⁹

Even though it does not sense odors, the external anatomy of the spiritual sense of smell plays several important roles in maintaining the health of the soul, just as the physical nose does for the body. Bersuire cites Constantine the African on the importance of the physical nose for drawing in air and odors, purging superfluities, and protecting the lungs from directly receiving cold air. The spiritual nose breathes out *spiritus*, the breath or spirit, of prayer and breathes in *spiritus* of grace. The phlegm of sin comes out and is wiped away from the nose, which thus protects the "lungs of conscience" from "the cold air of tepid affection."⁵⁰ The shape of the nose also has spiritual meaning. Bersuire applies physiognomic knowledge from Pseudo-Aristotle to argue, similarly to Gregory the Great in *Regulae Pastoralis*, that since the nostrils signify wisdom, nostrils that are too wide indicate too much judgment and

nostrils that are too narrow indicate not enough. The man whose nostrils are too wide is proud, thinking himself capable of judging everything, while the man whose nostrils are too narrow is weak in faith and in morals and commits mortal sins that will lead him to Hell, just as Galen explains that narrow nostrils are a sign of impending death in a patient. Bersuire goes so far as to argue that the nose is “the principal member of the face,” alluding to a medieval commonplace that the nose was the most beautifying facial feature and that having it cut off shamed the face more than any other disfigurement. Without the discretion between good and evil that comes from appropriate devotion to God, the soul is ugly.⁵¹

Through all these necessary functions of spiritual nasal anatomy, Bersuire asserts, “the whole face of the soul is decorated, and the ornament of integrity is generated on its whole surface. And thus it was said about the soul in Sg 7:4 ‘Your nose is like the tower of Lebanon.’”⁵² In this passage, the Bride’s nose is tower-like through the soul’s devotion to God. However, because he did refer to Sg 7:4, Bersuire returns to the nose of discretion metaphor. He suggests that the two pieces of flesh in the nose might signify a prelate of the Church who can sense both temporal and spiritual things, one through each piece of breast-like flesh, and uses his proper discernment “to purge and correct the whole body and to adorn the whole face of the Church.”⁵³ However, despite this discretion being the proper function of the clergy, just as it is of the nose, Bersuire argues that “in many places the Church today seems to lack such a nose and such an ornament, and it seems to have been repulsively cut off.”⁵⁴ The prelates of the Church lack good judgment regarding temporal and spiritual things, which means that they can neither correct nor adorn the body of the Church properly.

Following Bartholomew’s organization, Bersuire treats good and bad odors separately. However, their spiritual functions are related. If physical good and bad odors indicate the substances and complexions of the things they come from, spiritual good and bad odor come from the nature of a person and reveal the nature of that person’s life. Regarding good odor, Bersuire explains that

odor signifies the fame that comes from the substance, that is, from the life and morals, of the man it is dissolved from, and by mediating air, that is, by a neighboring bystander, it is carried to the nostrils of others.⁵⁵

Just as good odor requires four things for its existence and its perception (heat to release odor, fume dissolved from a substance by heat, carrying air, and the proper disposition of the olfactory nerves), perception of the spiritual odor of good fame requires four conditions in the life of the Christian it comes from:

the heat of charity that inflames the man, the vapor of virtue that exhales to the outside, the air of good neighbors that carries the odor of good

fame to others, and a well-disposed nerve in the heart of the others that receives that odor and judges it wisely.⁵⁶

Although the charity and virtue of the spiritually odorous individual are necessary components of the odor of good fame, the odor cannot exist without someone of good complexion perceiving and judging it and spreading the rumor of the person's good reputation to others.

Physical good odor cannot exist in a substance that is too coarse. Spiritually, this indicates the difference between the common people and nobles. The common people are spiritually coarser and less likely to release either a good odor or a stench—that is, to have either a good or a bad reputation. The good or bad reputations of nobles, however, spread widely. Pure, finely textured air also accepts odor more easily than thick, impure air. Pure air signifies nobles or the clergy and thick air signifies rustics or the laity. Rustics and the laity have more difficulty in taking up the odor of good teachings because their substance is uncondusive to learning. However, once they have learned good behavior, they are more likely to persevere in it than nobles or the clergy, in the same way that coarse air retains odors well even though it is difficult for it to pick up odor initially.⁵⁷

The odor that comes from a bad life is the stench of infamy. Because the soul of the worldly person is corrupt, it spreads bad odor throughout the neighborhood:

When the humors, that is, the affections, are corrupted in the soul, then the whole substance of life is putrefied and infected and thus necessarily exhales a stench, the fume of infamy, by which the smell and hearing of others is weighed down.⁵⁸

Just as the odor of good fame reflects good actions and is healing to others through its good example, the stench of infamy reflects bad actions that have putrefied the soul, and infects others. Sometimes wicked people can hide their bad deeds with “insincere good words and virtues” and pious actions such as penance in the same way that stench can be hidden under good odors.⁵⁹ Similarly, just as physical cold prevents objects from releasing odors, good behavior closes up the pores of a wicked person's soul and prevents its stench from being released to the perception of others. The wicked person might even seem to have the odor of good fame. However, the ability of a bad person to hide the stench of his true nature is only temporary,

for suddenly the heat of concupiscence that is resolved through bad desires rises up, so that the pores of the disposition are opened. Corrupt fume, that is, corrupt words and deeds, are evaporated, and thus the odor of fame that appeared is lost and the stench of infamy that had been hidden under constriction, or abstinence, is declared to all.⁶⁰

The stench of spiritual corruption thus cannot be long disguised with pious actions.

Bersuire emphasizes that the stench of infamy is corrupting to others in the same ways that physical stench causes illness. Just as fetid leprous breath is infectious to healthy people, so the fetid words and actions of habitual sinners are harmful to others. Lustful, proud, and greedy people

sometimes emit the breath of fetid words, show the fume of vain ostentation, and diffuse the stench of a lustful life and infamy in such a way that they corrupt all others around them and induce them to sin and generate the death of crimes and punishments in them.⁶¹

The spiritually fetid breath, fume, and stench of sinners corrupt others. Medicine held that stench was inherently corrupting because it came from putrefaction or a bad complexional balance, and Bersuire attributes the infectious nature of sinners to stench as well: “because their fame, words, and works are certainly stinking, it is inevitable that they are dangerous and harmful to others.”⁶² As if their fetid speech and actions corrupted the complexion of their souls, sinners become harmful substances in themselves, dangerous to fragrant, healthy souls.

While stench usually indicates a bad spiritual complexion and harms others, God might sometimes use the stench of sin to heal the body. This is analogous to doctors using stinking medicines in treatments such as waking a lethargic. Treatment of lethargy with a bad odor at the patient’s nostrils causes the body’s spirits to gather together to expel everything annoying them, both the stench and the disease. Bersuire argues that spiritual stench is primarily useful for removing sin in people who are too proud. They are aware that they have sins within themselves, but they will not stir up the spirits of their souls to remove the sins through confession because they think their sins are too small to bother with. God will sometimes take pity on them and send a large sin that they cannot ignore, the spiritual stench of which appalls the proud man so much that he confesses his sins both large and small and thus heals his soul.⁶³

Although he more usually emphasizes the decisive ability of the nose to perceive good and bad, Bersuire does not neglect the concept that man has a weak sense of smell compared to most animals and can only sense extreme odors. The fact that olfaction is stronger in animals than in men spiritually demonstrates that “the sense of smell of discretion and spiritual devotion” is stronger “in the laity than in ecclesiastics and in simple people than in the wise.” In the same way that quadrupeds find suitable food by the smell of plants, simple people seek the spiritual food of the Eucharist; they follow the path that leads to heaven, like dogs following the scent of their prey; and they smell the corpse of Christ and go towards him like vultures smelling cadavers from across the sea.⁶⁴ However, some Christians might use their spiritual noses too often. Lack of moderation in smelling signifies people with

a lack of moderation in living, who are too interested in worldly things and cannot perceive hidden spiritual truths, just as fish, whose lidless eyes are always seeing, cannot perceive intermediate colors through dilution of the visual spirit.⁶⁵ Similarly, the preference of man's soul that leads him to perceive good odors over bad indicates bad judges in the world who only want to hear flattering things. However, it might also signify the discretion of just men who accept good rumors about others more quickly than bad ones.⁶⁶

Worldly things might disrupt the nose of the soul in the same way that various afflictions harm the physical sense. Medically, smell might become corrupted by the bad complexion of the individual (as in a melancholic), by having the olfactory nerves cut (as in someone with his nose cut off), or by blockage of bad humors (as in leprosy or a cold). The spiritual parallels of these medical problems destroy "the olfaction in our imagination," which is the sense of smell of discretion.⁶⁷ Just as melancholics dislike good odors and appreciate bad ones, spiritual melancholics infected with hate and people who are overly fond of fleshly pleasures dislike the good behavior of others and approve of bad behavior. People who are ignorant of Christian truth are like those with their nose cut off, and heretics are similarly mutilated in their discretion. Finally, sin, particularly lust, might block proper discretion with bad humors so that the sinful individual can no longer distinguish between good and bad deeds.⁶⁸

Two other medical problems related to the sense of smell are stench of the nostrils and stench of the mouth. Bersuire's spiritual explanation of stench of the nostrils is nearly identical to the problem of lust blocking the nostrils. According to medical knowledge, stench of the nostrils was primarily caused by the growth of nasal polyps. Bersuire explains that these are corrupt humors that harden over time as they are dried by heat. They block the sense of smell and exhale a stench that the patient cannot perceive. Nasal polyps even corrode the nose and, without treatment, eventually disfigure the face. Bersuire explains that this illness is symbolic of lust, which is the most stinking of all the sins. A spiritual nasal polyp

devours wisdom and devotion, disfigures the face of conversation, blocks the nerves of discretion and sense, inasmuch as [the sufferer] does not perceive or become aware of the polypous or lustful stench of his own infamy, and he cannot discern or judge between the stench of lust and the odor of chastity.⁶⁹

Bersuire, like Jacobus de Voragine, attributes the spiritual stench of lust to persistent habit: the spiritual polyp forms from the putrefaction of chronic obstinance in sinning and becomes stinking flesh through carnality that infects the sinner's body and releases the stench of infamy. However, because his spiritual nose is blocked, the sinner cannot perceive his own stench.⁷⁰

Bersuire's treatment of stench of the mouth aligns closely with his understanding of the stench of infamy because it signifies bad speech.

Medically speaking, stench of the mouth could be caused by corruption of the gums, mouth ulcers, bad complexion of the chest, putrefaction of stomach humors, infection of the whole body (as in leprosy), or merely eating stinking food such as garlic. Spiritually, stench of the mouth indicates "deformity of words and speech."⁷¹ This spiritual illness occurs through the putrefying words of heresy, harmful bad speech and thoughts about others, lust or other bad actions corrupting body parts, or rotting of the whole person because of infamy, by which Bersuire means sustained bad behavior that has led to a bad reputation.⁷²

Pierre Bersuire combined traditional olfactory theology with more recent medical theory about the sense of smell. Although most of Bersuire's medical information derives from Bartholomew the Englishman, the Dominican Giovanni da San Gimignano used a broader source base in his *Summa de exemplis*, an exempla collection that was popular for more than two centuries after it was composed. It exists in fifty fourteenth- and fifteenth-century manuscripts, went through seven printings before the end of the fifteenth century, and continued to be printed in the early modern period.⁷³ Giovanni cites many of the important authors on olfaction, such as Aristotle and Constantine, and he may have employed Bartholomew the Englishman's *De proprietatibus rerum* as well. However, it is difficult to identify a single source of his information.⁷⁴ His discussion of spiritual olfaction employs smell as a metaphor for discretion, which he more often terms "prudence." He also designates the nostrils as symbols of human knowledge, a role that is usually given to the eyes or ears. Unlike Bersuire, he does not separate good and bad odors from discussion of the sense organ. He does expound on both vapor and fume in various guises, but he only connects either to odor once. He is far more interested in the sense organ and the anatomy of smell than in spiritual odor, which generally appears in this text in the two basic varieties of good and divine or bad and corrupting.

Giovanni was, like Bersuire, aware of the tradition of Song of Songs exegesis that attributed the nose of discretion to leaders of the Church. He explains that the head signifies prelates for seven reasons, one of which is that the head contains the senses:

The exterior senses are vision, hearing, taste, smelling, and touch. These senses all meet mystically in prelates, namely the vision of contemplation, the hearing of confession or consultation, the taste of divine love (by which the soul perceives the flavor of spiritual delights), the sense of smell of discretion [*odoratus discretionis*], and the touch of good works.⁷⁵

Giovanni devotes an entire chapter to the nose of discretion, in which he explains that prudence and discretion are like the sense of smell. His reasons are the mechanics, the sense organs, the medium, and the purpose of smelling.

Just as the soul uses the animal spirit as an intermediary to achieve olfaction, so too the mediation of the grace of the Holy Spirit creates prudence

and discretion for judging between good and bad things. Giovanni explains that the sense organs are two breast-like pieces of flesh and that their dual nature indicates that they have two powers.⁷⁶ These two powers are intelligence, or universal reason, and estimation, or particular reason. Intelligence, especially once it is perfected through prudence, can make judgments about general harmful and beneficial things. Estimation, which allows judgment about specific dangers, belongs even to animals. An example of estimation is a sheep running from a wolf.⁷⁷

Regarding the medium, Giovanni addresses the issues Avicenna brought up in *De anima* about whether odor is physically carried on the air in fumous evaporation or spiritually multiplied. Like other fourteenth-century thinkers, he concludes that although fumous evaporation passes into the air successively, the spiritually changed medium can spread farther than the material particles, allowing such phenomena as vultures sensing the odors of corpses from 500 miles away.⁷⁸ However, his real point is that both air and water can be media for odor. Because air is finer in texture, it indicates knowledge of spiritual things, and coarse water stands for temporal or corporeal things. Prudence regarding both spiritual and temporal things is necessary in order for Christians to live a good life. Everyone who is baptized has enough spiritual prudence to avoid things that will lead them to damnation. However, the second type of spiritual prudence, analogous to odors sensed through water, is not found in all Christians, and its role is to judge the safety or dangers of all aspects of life for the good of the community.⁷⁹ In sum, smelling is like prudence because the role of the nose is to perceive "odors needing to be accepted and stench needing to be shrunk from, and this is because it is helped by such appropriate odors and it is impeded by such corrupting stench," just as a person with prudence perceives the odors of objects and divides them into things that should be approached and things to be avoided.⁸⁰

When Giovanni explicates prudence he compares it to the nose, but when he discusses the nose itself, he makes a more original comparison of the nose to human knowledge. The nose is like knowledge because of its function, its two nostrils, its importance to the body, its size and shape, and the fact that its function can be damaged. The function of the nose is to discern between good-smelling and stinking things, just as knowledge separates true from false: "truth is to understanding as an odoriferous thing is to smelling."⁸¹ This is the nose of discretion that is able to perceive spiritual truth. Furthermore, the two interior holes of the nose signify two types of knowledge. The one that goes up to the brain for sensing odors is speculative knowledge while the one that goes down to the mouth for draining phlegm is practical knowledge. The second hole morally signifies knowledge that "represses and expels the excesses and extremes of vices," while the first hole "draws in speculative breath, that is, spiritual and intellectual perfection."⁸² As did other authors, Giovanni relates that two holes inside the nose spiritually signify the necessity of thinking about, purging, and perfecting both the body and the soul.

Medicine and philosophy taught that the physical nose was necessary to the body for breathing, for purging the brain, for tempering the brain's heat, for smelling, and for decorating the face. Elaborating on these points, Giovanni relates that drawing in air is like acquiring natural knowledge of sensible things, especially since air is also important for hearing and sight, which are the senses that add the most to knowledge. Purging the brain is similar to moral knowledge purging vices from the soul. Tempering the heat of the brain is analogous to tempering desire for knowledge by feeding the brain information. Since the nose smells resolved odors, Giovanni compares smelling to "resolving or demonstrative knowledge" that reaches conclusions to problems, such as mathematical knowledge.⁸³ Finally, the fact that having a nose beautifies a face and lacking one shames it can be morally understood to mean that "man is adorned, ornamented, and made honorable through knowledge."⁸⁴ Contrary to the nose of discretion metaphor, which explains that the spiritual nose is beautiful because it symbolizes right moral judgment, Giovanni argues that the nose is beautiful because it stands for knowledge.

The proper proportion of the nose is a reminder that knowledge should be moderate. Giovanni does not cite a physiognomic text, Gregory the Great, or Lev. 21:18 on nasal proportions, but he seems to have been thinking of them. Excess length indicates a scholar who studies for a long time and accomplishes nothing, that is, acquires little or no knowledge of the truth. Excess width signifies a scholar who tries to know too many things, which is prohibited in Romans 12:3 and Ecclesiasticus 3:22. Excess height, which is knowledge of heavenly things, is also prohibited in Ecclus. 3:22. Finally, bad disposition of the brain can prevent the nose from exercising its functions, which Giovanni understands to indicate something blocking knowledge. The proper exercise of knowledge might be hampered by natural bad disposition towards violence or coarseness of nature; by fetid humors in the brain, analogous to carnal sins; by overgrowth of flesh (polyps), which indicates gluttony; by too many humors flowing from the brain (e.g., in a cold), which indicates proud thoughts or emotions blocking knowledge; and by constriction, which stands for people who only try to know *scibilia*, "knowable things"—that is, things that are easy to learn or are learnable through the senses—and do not attempt difficult problems.⁸⁵

When Giovanni addresses fume and vapor, he typically discusses them as meteorological phenomena and therefore does not discuss odor. He mentions fume in the context of fumes rising to the head, which stand for the anxieties of prelates or temporal prosperity that weighs down the head with avarice.⁸⁶ He also links fume with odor twice outside of his discussions of smell. The first is when he explains that the fume of an extinguished candle causes a pregnant woman to abort, which is a miscitation of Aristotle's assertion in the *History of Animals* that pregnant mares abort when they smell the odor of an extinguished candle. Giovanni does not mention odor specifically in his explication of this example, in which the pregnant woman is a soul whose conceived goodness is aborted by worldly prosperity.⁸⁷ He does mention odor

when he asserts that fume is like worldly prosperity “because fume carries stench.”⁸⁸ Just as fetid things are rotten and release fumes, worldly prosperity corrupts life and leads to the stench of infamy.⁸⁹

Just as Jacobus de Voragine’s texts cite medical information regarding odors other than direct discussions of olfactory anatomy and the nature of odor, so Pierre Bersuire’s and Giovanni da San Gimignano’s preaching manuals include a variety of moralized philosophical and medical information related to the sense of smell. For example, Bersuire correctly cites Aristotle’s example of snuffed candles causing horses to miscarry, explaining that the candle is the reputation of a clergyman, especially a prelate or a member of a religious order. The candle is snuffed out by sin. The smoke of the candle is the fume of infamy that reaches the nose of the pregnant horse, which stands for the ears of simple people. The simple people abort the good deeds they would have done through the bad example of the sinful clergyman, who they might even imitate.⁹⁰ Likewise, similarly to some of Jacobus’s examples, Giovanni moralizes the complexion and medical applications of violets. He explains that

virgins are like violets because they are cold, watery, and odoriferous. Virgins are cold to desire of the flesh, watery through tears of devotion, and odoriferous through honesty of example. Note also that the odor of violets mitigates the heat of the brain, strengthens the animal spirit, and provokes sleep. Thus, virginity cools the ardor of the flesh with its odor, strengthens the spirit, and relaxes towards sleep, that is, it disposes and prepares one towards quiet contemplation.⁹¹

In this example, Giovanni exploits the complexion and medical use of the odor of violets to make an analogy about the beneficial effects of virginity. He also compares virginity to the odor of cedar, which makes serpents (demons) flee and relaxes men (angels); to the odor of roses, which fills the house of the conscience; and to the odor of lilies, because lilies smell good when they are intact but stink when they are crushed and rubbed, just as man’s flesh spiritually smells good when he is a virgin but stinks when it is rubbed with the sin of lust and its virginity is lost.⁹² Thus, the preaching resources examined above contained a wealth of medically aware olfactory theology.

Despite its origins in university medicine and philosophy, the scholastic olfactory theology that made up a part of preaching manuals was intended to be shared with a wide audience. Even Giovanni’s text, which is more scholastic in tone than Bersuire’s, is not necessarily unapproachable because of its scholastic content. For example, when he discusses the significance of the attribution of human body parts to angels, Giovanni refers not only to texts (including the Bible) that present angels with human bodies but also to art depicting angels as human-like beings. Regarding the nostrils, he explains that

painters attribute nostrils to [angels] because they flee from sin as if it were fetid and they love virtues as if they were odoriferous things, and

they most wisely judge and distinguish between the clean and the unclean, the fetid and the aromatic.⁹³

Giovanni refers specifically to painters and art in only three of the eleven body parts that he attributes to angels, but he does not refer to texts at all after the introduction to the chapter. It is easy to imagine a preacher incorporating Giovanni's discussion of the body parts of angels while pointing to an artwork in his church. If the preacher wished, he could follow up the simpler observation that the nostrils distinguish between good and bad with a more complex discussion of spiritual nasal anatomy or analyze the spiritual odors of medicines such as myrrh, which another figure in the painting might be bringing to the Christ child.

Scholastic medical concepts from preaching manuals were incorporated into sermons for the laity. Heather Webb has argued that Catherine of Siena likely heard such sermons to explain her knowledge of the anatomy of the heart: while the descriptions of the heart in her writings do not align with contemporary artistic depictions, they do match the descriptions of Dominican encyclopedias.⁹⁴ Sermons were one source of scholastic theology and philosophy available to popular audiences, in addition to contact with medical professionals, conversations with clergymen and scholars about which we can only speculate, and vernacular translations of scholastic texts or works composed in vernacular languages. Given the long-term popularity of the three authors examined here, it seems reasonable to assume a fairly broad dissemination of the scholastic theology of smell that they present. These preaching texts did not introduce an entirely new theory of spiritual olfaction. Instead, they modified traditional concepts to include the essentials of educated opinion about the sense of smell. The amount of new information that the audience had to digest in, for example, a sermon describing the reason the odor of lilies or myrrh symbolizes virginity was probably relatively small, perhaps making it easier to understand and retain than if the same medical knowledge had been presented outside of a religious context. Even the more difficult information about the anatomy of smelling and the nose of discretion is rooted in the simple observations that the nose distinguishes between good and bad odors, that air goes in, and that phlegm comes out. The preacher merely gave spiritual meaning to these physical functions. Thus, there is no reason to suppose that sermons incorporating scholastic information were entirely beyond the understanding of the laity.

Vernacular examples of late medieval spiritual smell

Fourteenth- and fifteenth-century works of vernacular mysticism demonstrate that their authors understood and disseminated aspects of the medically aware theology of smell, including discussion of both the sense organ and its object. As Chapter 5 argued, the nose of discretion is the usual later medieval form of the spiritual sense organ. While it had its origins in early medieval

biblical exegesis, it began to enter general theology in the late twelfth century, at the same time as Arabic medicine entered theology. The nose of discretion, with its interest in the anatomy and purpose of the spiritual nose, was especially easy to combine with Arabic medicine, as Thomas the Cistercian's *Song* commentary demonstrates. The preaching manuals also frequently associated it with scholastic theory. For these reasons, this metaphor can be taken as a sign of an author's awareness of scholastic olfactory theology.

Two late fourteenth-century vernacular mystical texts mention the nose of discretion: the Middle English *Cloud of Unknowing*, which was based on Pseudo-Dionysian works, and the *Revelations* of Birgitta of Sweden (1303–73), which was composed in Swedish and translated from the Latin version into many European vernaculars. The author of the *Cloud of Unknowing* incorporates some of the anatomy of the nose into his discussion of smelling, while Birgitta explains what it means when the spiritual nose has been removed. Medical functions of the nose (as opposed to its anatomy) are less commonly found in vernacular literature. However, Birgitta's *Revelations* include one example, in which the mystic gives a negative spiritual interpretation to the nose's role in bringing odors towards the brain in order to strengthen it.

Spiritual odor was far older than the nose of discretion and made its way into nearly every religious work in the Middle Ages. However, vernacular mystical works from the fourteenth century onwards began to discuss spiritual odors with awareness of scholastic thought. In her Old French *Mirror of Simple Souls*, the Beguine Marguerite Porete (c. 1250–1310) reveals her awareness of the importance of taste, smell, and sight in judging the qualities of things. Catherine of Siena (1347–80), who was associated with the Dominican order, frequently employs medical metaphors about odors, in particular linking stench with the spiritual imbalance of sin. Finally, the autobiography of English mystic Margery Kempe (c. 1373–1438) shows interest in nourishing odors at the same time that scholastic philosophers and physicians were interested in the possibility of people living on odors.

The *Cloud of Unknowing* introduces the spiritual nose in the context of the trickery of the Devil. The Devil is able to make men, including priests and abbots, think they are doing God's work by pointing out the sins of their fellows, but their inspiration is in fact demonic rather than divine.⁹⁵ Unlike the proper judgment of clergymen against the sins of parishioners, the Devil incites improper spiritual discretion that leads to false or hasty judgment. The *Cloud's* author figures this bad judgment as a deformed nose. He explains that whenever the Devil takes a physical form, he only has "only one nostril, which is great and wide."⁹⁶ If he tilts his head back, his brain (which is made up of hellfire) is visible, but any person who sees it will be driven mad.⁹⁷ This disfigurement signifies the spiritual state of humans who serve him:

For he so enflames the imagination of his contemplatives with the fire of Hell that suddenly, without discretion ... and without any deliberation, they will take it upon themselves to point out other men's faults too soon.

This is because they have only one nostril spiritually. For the separation between the nostrils is in a man's bodily nose, and it separates one nostril from the other, betokening that a man should have spiritual discretion and be able to separate the good from the bad, and the bad from the worse, and the good from the better before he give any full judgment of anything that he has heard or seen done or spoken about others.⁹⁸

The *Cloud* author's assertion that the Devil has a single, wide nostril and a fiery brain indicates that his human servants, with improperly heated imaginations (the spiritual interpretation of the brain), hastily judge the behavior of others but lack reflection on themselves.⁹⁹ Thus, sinful people have unhealthy spiritual brains, so their discretion (their spiritual sense of smell) does not work properly. Figuratively, those with healthy brains have two nostrils, which signifies spiritual discretion. They are not only aware of their own faults but will reflect on what they have heard about another person before making a judgment. The physical nose demonstrates this functioning of the spiritual nose with the separation between the two nostrils. While likely sources for the physical and spiritual sensory details in the *Cloud* include sermons, Bersuire, or biblical exegesis, the *Cloud's* author cites only necromancers and others who have seen the Devil's physical body.¹⁰⁰

Birgitta of Sweden's *Revelations*, composed in Swedish between the mid-1340s and her death in 1373, is another example of the use of the nose of discretion metaphor in vernacular languages, although translations were not based on the original Swedish text but rather on a Latin edition edited by Birgitta's confessor, Alfonso of Jaén, between 1377 and 1391.¹⁰¹ In the late Middle Ages, the *Revelations* received English, German, Danish, Dutch, Italian, Czech, and even Swedish translations from Alfonso's Latin version.¹⁰²

The *Revelations* are arranged as a collection of visions, and in each God communicates a particular message to Birgitta. Two of the visions contain spiritual interpretations of the nose. In one, Christ tells Birgitta about a bishop who has a good reputation but a flawed internal character, which he reveals to her through a description of the man's corrupted spiritual body. Each body part is linked with a spiritual virtue that the man lacks or has caused to become corrupted through vice. Christ relates to Birgitta that "people think he is a well-dressed, strong, and dignified man, active in the battle of the Lord. However, when his helmet is removed, he is disgusting to look at and unfit for any work."¹⁰³ His internal organs, including his brain and his intestines, are visible and stinking. His skin falls away from his flesh. His feet are broken and he cannot walk. His chest is filled with worms, his arms are like snakes, and a scorpion is in his heart. His facial features are also disfigured: his ears are on his forehead, his eyes are in the back of his head, and his nose has been cut off. Each of these physical characteristics reveals an aspect of the man's spiritual flaws, which Christ explains. The ears on his forehead signify that, rather than being properly humble, he only wants to hear his own praises spoken. Similarly, his eyes are on the back of his head because he only thinks

about the present and not his future after death. The cut-off nose signifies that he lacks discretion: "His nose is cut off, inasmuch as he has lost the discretion by which he might distinguish between sin and virtue, between temporal and eternal glory, between worldly and eternal riches, between those brief pleasures and eternal ones."¹⁰⁴ Clergymen in particular were supposed to have spiritual discretion but, like Bersuire's clergymen whose spiritual senses of smell were disrupted by worldly things, this man does not exercise his spiritual olfaction properly, and therefore his spiritual body is without the nose of discretion that should ornament a bishop. Either Birgitta or one of her Latin editors had absorbed contemporary thinking about the spiritual significance of the nose, and this information was communicated in the vernacular throughout Europe.¹⁰⁵

Later, Birgitta has a similar vision of the souls of a man and woman with deformed and disgusting body parts. The man has horse-like nostrils while the woman's are putrid and filled with bloody pus. The horse nostrils signify that the man thinks the stench of his sins is pleasant in the same way that a horse enjoys the smell of its own excrement.¹⁰⁶ The woman's nostrils are pus-filled and fetid because the woman does whatever she can to please her body, "just as a sweet odor is pleasantly transmitted to the brain through the nose so as to comfort it."¹⁰⁷ Birgitta negatively interprets the medical belief in the power of odors to strengthen the brain as a symbol of a person who has spiritually fetid nostrils because she caters to the desires of her body instead of her soul.

The powers and characteristics of spiritual odors as they entered vernacular culture are more varied than discussions of the spiritual sense organ. Marguerite Porete's *Mirror for Simple Souls*, first written in the 1290s and subsequently revised and lengthened, circulated in Europe in French, English, and Italian as well as in Latin long after its author was burned at the stake for heresy.¹⁰⁸ In her text, Porete cites the scholastic method of judging the qualities of things by color, flavor, and odor. In a dialogue between Love and the Soul, she explains that the Soul needs to die three deaths before it reaches oblivion, which is the end goal of the Soul. The character of Love asserts that the soul must die to sin, "so that there remains in her no shade or taste or smell of anything which God forbids in the Law."¹⁰⁹ The soul is free from sin when it has no color, flavor, or odor of sin left in it.

It seems likely that Porete drew this method of judgment from discussions of the transubstantiation of the Eucharist, which cite the color, odor, and flavor of the bread, often along with its shape, as a possible contradiction of its true divine nature. For example, Albertus Magnus reasons in *De corpore domini* that

if the bread does become the body of Christ, it is necessary for some alteration to occur in the bread. Every alteration is change according to quality. Therefore, it is necessary that the qualities of the bread, which are the color, shape, flavor, and odor, not remain. This is against our senses, because we see that all these things remain in the bread.¹¹⁰

Porete cites the qualities of the Eucharist as well. As if responding to Albertus's objection that the qualities of bread seem to remain in the Eucharist, she has the Soul of Faith relate that

we see him [Christ] through the power of faith, giving the lie to what our senses tell us, which only see bread there, and which do not perceive or taste or smell anything else. But our faith contradicts them all, for faith believes firmly without doubting, that here is no whiteness or smell or taste, but the precious body of Jesus Christ.¹¹¹

Thus, when Porete urges a death of the soul to sin that purges it of color, odor, and flavor, she is describing a Eucharist-like transformation of the soul into a state of grace that contains different qualities than the ordinary human soul. She also refers, even if indirectly, to the scholastic theory that the qualities of things were most simply judged by flavor, odor, and color.

Catherine of Siena implements medical metaphors of spiritual odor in the *Dialogue* and in her letters. The *Dialogue*, written in Italian, is presented as a discussion between God and Catherine. Her many letters to friends, acquaintances, and authority figures are also in her vernacular Italian. Alongside many traditional citations of the stench of sin and the odors of virtues, purity, and martyrdom, in both the *Dialogue* and her letters Catherine writes frequently about sinners as rotting body parts that need medical attention before they spread their infectious and sickening stench to others. She also alludes to nourishment by spiritual odors.

In the *Dialogue*, God explains to Catherine that the souls of worldly people are like trees that “put forth nothing but deadly fruits, putrid flowers, filthy leaves, and branches bent down to the earth, broken by this wind and that.”¹¹² God elaborates on this theme, lamenting to Catherine that “I told you these souls’ flowers are putrid, and this is the truth. Their flowers are the stinking thoughts of their hearts ... This flower of theirs gives off a stench of false and wicked judgment.”¹¹³ Worldly souls make false judgments about God and his actions. They also, like the servants of the Devil in the *Cloud of Unknowing*, judge their neighbors rashly, without knowing the whole story behind a rumor. Such people attack God as well as their neighbors with their evil speech, causing harm in the world and in the afterlife.¹¹⁴ Thus, Catherine emphasizes the fetid nature of bad thoughts about others, which can harm others both spiritually and materially.

Catherine writes similarly in a letter about three winds, each originating from a mouth, that induce people to sin. The winds are the devil, the world, and the flesh, and the first and last of these stink. The first wind, the Devil, brings bad thoughts such as judgmental pride. She laments that the Devil’s stench has “poisoned the world.” Those infected by this wind judge others in their heart and then “belch out the stench of their grumbling” to infect more people.¹¹⁵ The third wind, the flesh, makes people animalistic and also spreads its influence with the poisonous stench of its breath and by the stench coming

from those who have been affected by it. Those infected by the flesh suspect everyone else of being guilty of their own sins.¹¹⁶ Both stinking winds spread sin by infection, and those initially infected can spread the illness to others through complaints and evil thoughts. Such unkindness among neighbors is a particularly fetid sin throughout Catherine's works. In the *Dialogue*, she argues that when a person is cruel to his neighbors, "the sinner becomes a stinking beast, poisoning not only one or two but anyone who might approach in love or fellowship."¹¹⁷ The harm sinners cause to others is a theme that runs through most of Catherine's medically aware citations of spiritual odor.

Both the *Dialogue* and the letters are sprinkled with examples of Catherine describing sinners as weeds, unhealthy plants, or rotting body parts infecting the body of the Church. According to the *Dialogue*, all people have the wound of Adam's sin, from which Christ drained away the pus, leaving a scar and a tendency towards sin.¹¹⁸ God sent Christ to heal the wound because human nature "was incapable of atoning for sin and draining off the pus from Adam's sin, for that stinking pus had infected the whole human race."¹¹⁹ The body of humanity was too ill to heal itself without divine aid. After Christ healed the wound, it was the role of the clergy to keep the wound from becoming infected again. God describes the Church Fathers to Catherine simultaneously as good gardeners who grew fragrant plants and removed weeds and as surgeons who "did not let my members grow rotten for want of correction."¹²⁰ A good spiritual doctor will not only treat wounds properly, with both soothing, ointment-like words and cauterizing condemnation of sin, but also know when a member of the Church must be removed to save the rest of the body. The leaders of society must have the ability to exercise such doctoring, which is also divine justice, because uncorrected sinners are like rotten body parts and will spread their illness to other members of the Church.¹²¹

Priests who are sinful or fail to correct those under their care are also fetid and infectious. For example, God laments the lack of poverty and celibacy among the clergy in the *Dialogue*, declaring:

All these evils, and so many others I do not want to tell you lest your ears be infected with the stench, follow upon the sin of evil shepherds who will not correct or punish the sins of their subjects.¹²²

Even hearing about the sins of priests who are both personally sinful and fail to correct their flocks is enough to taint Catherine's soul. Catherine's attitude to sinful priests is the same in a letter of 1376, in which she rebukes the parish priest of Asciano with the imagery of cut flowers. She begs him,

Please, please be the fragrant flower you ought to be, breathing out a sweet perfume in God's gracious presence!

You know well that flowers that stand too long in water give off a stench instead of fragrance. It really seems to me, father, that you and other ministers ought to be like flowers. But the water this flower has been put

into is the wickedness and filth of sin and worldly wretchedness. Oh how miserably wretched, since this man was put as a flower in holy Church, to be answerable for those in his care! As you know, God demands integrity and purity of such men. But—oimé! Venerable father, God is finding just the opposite: not only are they themselves corrupt and putrid, but they corrupt all who come near them!¹²³

Catherine accuses the priest of being too worldly, which ruins the odor of sanctity that he should project. The bad behavior of priests causes others to act badly, which Catherine explains with an allusion to the disease-spreading properties of plants rotting in water.

The sexual sins of priests smell especially bad. Even demons flee from lust, because their angelic natures are horrified by it.¹²⁴ God reminds Catherine that, when she became aware of the lust among all people in all walks of life,

your spirit suffered so from the stench that you thought you would surely die ... If you recall, when I let you smell even a bit of this stench, you were in such a state that you could stand no more.¹²⁵

Just as physical bad odors harmed the body, the stench of sin irritated Catherine's soul in an unbearable way. She begged God for mercy, asking him to help the sinners, to kill her so that she did not have to smell the sin, or to provide a place for good Christians to flee "this leprosy" so that they would not be infected by it. God replied that she should take refuge in Christ and pray for the sinners with "the incense of constant prayer."¹²⁶ However, she was still bothered by the stench until she took communion. The odor of the communion bread not only removed the bad odor from Catherine's nostrils but the "fragrance of blood" that came from the Eucharist remained in Catherine's senses for days.¹²⁷

Catherine attributes lasting power to the odors of the bread and wine of communion, perhaps indicating a nourishing power as well. There is a similar example later in the *Dialogue*, where a woman who longs for the sacrament is repeatedly denied it by priests. The woman assumes she has been asking for too much and "reproache[s] herself for her presumption." God approves of her humility and gifts her with knowledge about each part of the Trinity. Her soul is united with God. While it is there,

to satisfy her longing, she received holy communion from me [God]. And as a sign that I had in truth satisfied her, for several days she sensed in a wonderful way, in her bodily taste, the savor and fragrance of the blood and body of Christ crucified.¹²⁸

The woman's desire for communion is sated by spiritual communion with God, and she perceives the taste and smell of the sacrament in her bodily senses as a sign of her soul's nourishment. Catherine refers more decisively

to spiritual nourishment when God explains to her that properly obedient Christians “do not seek their own will but bow their head and nourish their soul with the fragrance of true holy obedience.”¹²⁹ Obedience leads Christians closer to God, and they are spiritually nourished by the odor of sanctity that accompanies closeness with Christ.

For Catherine, although the stench of sin spreads its infection among neighbors in the same way that bad odor spreads disease, Christ’s odor of sanctity is capable of nourishing the Christian’s soul. Similarly, in the late 1430s *Book of Margery Kempe*, Kempe insists that the spiritual odors she perceives are capable of nourishing not only her soul but also her body. After she had a vision of her marriage to Christ in Heaven, Kempe received spiritual and bodily comforts from God. She relates that

sometimes she felt sweet smells with her nose. They were sweeter, she thought, than any sweet earthly thing that she had ever smelled before. Nor might she ever tell how sweet they were, for she thought she might have lived on them if they would have lasted.¹³⁰

Kempe perceived, evidently many times, impossibly good odors that seemed strong enough to nourish her by themselves.

Kempe cites a specific case of perception of heavenly odor later in the *Book*. A priest who believed in her link with God asked her to pray on whether the prior of Lynne was good for that job or if he should be replaced. She prayed and reported that the current prior should go to Norwich and one of his brothers from Norwich should be prior. Her directions were followed only briefly, after which time the men switched places again until the unsuitable prior of Lynne died, four years later. Up until the prior’s death, Kempe continued to think that the priest from Norwich should take his place. Finally, as she was strolling in the White Friars church in Lynne one day,

she felt a wonderfully sweet and heavenly odor that she thought she might have lived on without meat or drink if it would have continued. And in that time, our Lord said to her, “Daughter, you may know for sure by this sweet smell that there will be a new prior at Lynne in a short time, and it will be he who was last removed from the position.”¹³¹

In this example, the heavenly odor is a certification that what Kempe is thinking is God’s communication to her and not her own opinion. Again, the heavenly sweet odor was strong enough that it could have fed Kempe’s body as well as her soul if it had endured longer.

The authors of these late medieval vernacular texts all possessed a degree of knowledge about the physical workings of the sense of smell. The *Cloud of Unknowing*’s author gives a simplified spiritual anatomy, while Christ teaches Birgitta of Sweden the significance of several varieties of spiritually deformed noses. Marguerite Porete understood the purpose of judging things

by their sensible qualities, in particular flavor, odor, and color, and applied them outside of the Eucharistic context in which she must have learned them. Catherine of Siena was fervent in her belief that sin is infectious and stinking and must be cured before it spreads to others. Finally, while it was traditionally believed that the holy could live without food and drink, it seems significant that Catherine of Siena and Margery Kempe both refer to nourishing odors at the same time as philosophers and physicians were exploring the possibility of humans living on smells.¹³²

Conclusion

The copious material on the sense of smell and odors contained in scholastic philosophy and medicine was merged with traditional theology and found its way into sermons beginning in the late eleventh century. This medically aware late medieval theology of smell did not replace but enriched the earlier Christian tradition of spiritual smell. While there were other ways by which those without a university education might have come across medical aspects of the scholastic theology of smell, the popular preaching texts of Jacobus de Voragine, Pierre Bersuire, and Giovanni di San Gimignano provide more certainty that this late medieval spiritual smell reached popular audiences than speculation about what the laity read or who they spoke with. The new spiritual smell was based on familiar, traditional concepts such as the odor of sanctity and the stench of sin. When preachers introduced the nose of discretion with its two interior holes, one for spiritual things and other for temporal things, little of the information provided was totally new. The foundation of theories of both physical and spiritual smelling—that the nose distinguished between good and bad odors—was obvious. The audience might take away, as did the author of the *Cloud of Unknowing*, the new information that two holes in the nose were necessary for proper judgment of people and things and that the health of the brain was important to the sense of smell. Vernacular texts such as the *Cloud* and Catherine of Siena's many writings point towards the absorption and communication of scholastic olfactory theology among popular audiences. Just as in knowledge of physical medicine, most medieval Europeans likely did not possess full understanding of the complex parts of scholastic theology regarding the sense of smell, but they were not entirely ignorant, either.

Notes

- 1 [A]liquid habent de natura humida, aliquid de aërea, aliquid de ignea seu calida, sicut patet in fumo ex aromatibus resoluto. Bonaventure, *Itinerarium Mentis in Deum*, Latin from Quaracchi edition, trans. Zachary Hayes, Works of St. Bonaventure 2 (Saint Bonaventure: Franciscan Institute Publications, 2002), II.3, 65.
- 2 Dum autem spe suspirat ad suscipiendum Verbi inspiratum, per desiderium et affectum recuperat spiritualem olfactum. Ibid., IV.3, 98–99.

- 3 Albertus Magnus, *Super III sententiam*, III.13.4, in *Opera Omnia*, Vol. 28, ed. Borgnet (Paris: Vives, 1894), 240.
- 4 An example of a traditional concept that aligns with philosophy is Albertus's frequent placement of the heat of charity alongside an allusion to odor. E.g., on John 4:24: *Adoratio enim est, quae virtute et fervore devotionis ascendit, quae calore charitatis ignescit, et fragrantia aromatum omnium virtutum coram Deo odorem spargit*. Albertus Magnus, *Super Iohannem*, in *Opera Omnia*, Vol. 24, ed. Borgnet (Paris: Vives, 1899), 173.
- 5 Joseph Ziegler, *Medicine and Religion c. 1300: The Case of Arnau de Vilanova* (Oxford: Clarendon, 1998), 136.
- 6 Arnau de Vilanova, *Ars catholicae philosophiae*, in "L'Ars catholicae philosophiae: Primera Redacció de la *Philosophia catholica et divina*," by Josep Perarnau, *Arxiu de Textos Catalans Antics* 10 (1991): 59–60.
- 7 *Ibid.*, 73.
- 8 "Wel knew he the olde Esculapius, / And Deyscorides, and eek Rufus, / Olde Ypocras, Haly, and Galyen, / Serapion, Razis, and Avycen, / Averrois, Damascien, and Constantyn, / Bernard, and Gatesden, and Gilbertyn." Geoffrey Chaucer, *The Canterbury Tales*, ll. 429–34, in *The Riverside Chaucer*, 3rd edition, ed. Larry Benson (Boston: Houghton Mifflin, 1987), 30.
- 9 Luke Demaitre, *Medieval Medicine: The Art of Healing, from Head to Toe* (Santa Barbara: Praeger, 2013), 27–28.
- 10 *The Life of Cola di Rienzo*, trans. John Wright. Mediaeval Sources in Translation 18 (Toronto: Pontifical Institute of Mediaeval Studies, 1975), 23, 61
- 11 Siegfried Wenzel, *Latin Sermon Collections from Later Medieval England: Orthodox Preaching in the Age of Wyclif* (Cambridge: Cambridge University Press, 2005), xiii, 319. Bartholomew includes a short passage on the pious purpose of his work at the end of this chapter, and then he goes on to discuss touch and taste without further authorial interjection: "In this and in other operations and conditions of nature, there is wonder for divine wisdom, which, through these and other similar things, it [divine wisdom] gave to us to know in a certain way how, through those sensed materials towards knowledge of those things that are above sense, the interior parts of the heart may little by little be moved forward towards spiritual knowledge, and simply that is my intention and my end in this little work. These things said about olfaction are enough." Perhaps he particularly associated smell with the spiritual senses. Bartholomew, *De proprietatibus rerum*, III.19, 70.
- 12 Wenzel, *Latin Sermon Collections*, 319–20.
- 13 *Ibid.*, 5.
- 14 Ziegler, *Medicine and Religion c. 1300*, 176–213.
- 15 There is an online database that contains the two sermon collections used here at Sermones.net: Édition électronique d'un corpus de sermons latins médiévaux. I used the edition of the *Liber Mariale* from sermones.net and Maggioni's critical edition of the *Sermones quadragesimales*: Jacobus de Voragine [Iacopo da Varazze], *Sermones quadragesimales*, ed. Giovanni Paolo Maggioni, Edizione Nazionale dei Testi Mediolatini 13 (Florence: Sismel, 2005).
- 16 Eliana Corbari, *Vernacular Theology: Dominican Sermons and Audience in Late Medieval Italy*, Trends in Medieval Philology 22 (Boston: De Gruyter, 2013), 21.
- 17 Carla Casagrande, "La vie et les oeuvres de Jacques de Voragine, o.p.," Sermones.net: Édition électronique d'un corpus de sermons latins médiévaux, <http://sermones.net/content/la-vie-et-les-oeuvres-de-jacques-de-voragine-op>.

- 18 *Nardus autem est herba humilis, odorifera et calida: per hoc quod est humilis, notatur eius humilitas: per hoc quod est odorifera, notatur eius uirginitas; per hoc quod est calida, notatur eius charitas.* Jacobus de Voragine, *Sermones aurei* [Liber mariale], ed. Robert Clutius (Vienna, 1760), sermo 39, Schneyer 710, www.sermones.net.
- 19 Ibid.
- 20 *[N]ardus est herba parua et odorifera et pectoris purgatiua.* Jacobus de Voragine, *Liber mariale*, sermo 69, Schneyer 740.
- 21 Ibid.
- 22 *[T]ota odorifera. Odor unguentorum tuorum super omnia aromata (Ct 4:10); quia eius odor adinstar cinnamomi confortat cor contra ictus tribulationum, adinstar balsami preseruat a putredine peccatorum. Et adinstar myrrhe fugat fumos tentationum.* Jacobus de Voragine, *Liber mariale*, sermo 60, Schneyer 731.
- 23 Ibid.
- 24 *[C]ognoscitur ex odore, quia ex sua aromaticitate cerebrum multum confortat, et fluxum restringit; a cerebro autem fluunt sensus et motus. Odor igitur sanctitatis beate Marie confortat uirtutem motiuam, dum eam allicit ad bene operandum. Confortat uirtutem affectiuam, dum eam inflamat ad diligendum. Confortat uirtutem intellectiuam, dum eam illuminat ad cognoscendum. Iste etiam odor sue sanctitatis restringit fluxum carnalitatis, ideo assimilatur odori thuris, qui habet restringere fluxum rheumatis.* Jacobus de Voragine, *Liber mariale*, sermo 28, Schneyer 699.
- 25 Corbari, *Vernacular Theology*, 4–5.
- 26 Jacobus de Voragine, *Sermones quadragesimales*, Schneyer 279, 465.
- 27 Ibid., Schneyer 210, 79.
- 28 *[R]odit in anima omnia merita nostra.* Ibid., 80.
- 29 *Inter ceteros morbos, lepra est abominabilior apud omnes. Est enim morbus fetidus, sitibundus et contagiosus.* Jacobus de Voragine, *Sermones quadragesimales*, Schneyer 234, 206.
- 30 *Lepra igitur, in quantum est morbus fetidus, significat peccatum luxurie que coram Deo et hominibus fetet.* Ibid.
- 31 *[A]nimus est et mortuus et fetidus.* Ibid.
- 32 Ibid., 207.
- 33 Sherry L. Reames, *The Legenda aurea: A Reexamination of its Paradoxical History* (Madison: University of Wisconsin Press, 1985), 4.
- 34 Ibid., 103.
- 35 *[A]b apollo, quod interpretatur mirabilis, et naris, per quam intelligitur discretio, quasi mirabilis discretionis vir.* Jacobus de Voragine [Jacopo da Varazze], *Legenda aurea*, Vol. 1, ed. Giovanni Paolo Maggioni, 2nd edition, Millennio Medievale 6 (Florence: Sismel, 1998), no. 93, 643. Gallacher notes this instance of the nose of discretion as well in Patrick J. Gallacher, ed. *The Cloud of Unknowing* (Kalamazoo: Medieval Institute Publications, 1997), note on ll. 1936–37.
- 36 Jacobus de Voragine, *Legenda aurea*, no. 46, 288.
- 37 Jacobus de Voragine, *The Golden Legend*, trans. Ryan, no. 65, 1:267; *sui flatus fetore infecit* (Jacobus de Voragine, *Legenda aurea*, no. 62, 1:443).
- 38 *[N]e forte odor incendii uexaret incautos.* Jacobus de Voragine, *Legenda aurea*, no. 95, 1:653.
- 39 *[O]dor sue uirginitatis de aliorum cordibus expellebat motus brutales.* Jacobus de Voragine, *Liber mariale*, sermo 157, Schneyer 828.

- 40 Jacobus de Voragine, *The Golden Legend*, trans. Ryan, no. 37, 1:149; *motus in carne serpentinos occidebat ... uirtus autem castitatis uirginis etiam impudicorum corda medullitus penetrabat et ea quo ad ipsam protinus casta reddebat* (Jacobus de Voragine, *Legenda aurea*, no. 37, 1:247).
- 41 Jacobus refers to an aromatic strengthening the heart in *Liber mariale*, sermo 60, Schneyer 731.
- 42 Jacobus de Voragine, *The Golden Legend*, Vol. 2, trans. Ryan, no. 113, 49; *dictus scholaris accessit et manum eius cum multa deuotione osculatus est. Quam cum osculatus fuisset, tantam ex illa prodire sensit odoris fragrantiam, quantam in uita sua numquam aliquando est expertus. Et ex tunc estus libinidis mirabiliter in eo refriguit adeo ut qui antea erat uanus et lubricus efficeretur postmodum continens atque castus. O quanta munditia puritate eius caro pollebat, cuius odor tam mirabiliter sordes mentis purgabat!* (Jacobus de Voragine, *Legenda aurea*, Vol. 2, no. 109, 726).
- 43 E.g., Ralph Hexter, "The *Allegari* of Pierre Bersuire: Interpretation and the Reductorium morale," *Allegorica* 10 (1989): 51–84. The lack of scholarly attention to the other parts of the text is, as Hexter notes, probably due to the fact that the book on Ovid is the only one that has been published, translated, and edited in modern times. *Ibid.*, 53.
- 44 Ziegler, *Medicine and Religion c. 1300*, 202, 207.
- 45 *[D]iudicat de fetore vel odor, id est, de infamia et fama aliorum. A substantia enim cuiuslibet id est a vita et moribus resoluitur odor famae, qui tandem in aere id est in uicinia propinqua miscetur, tandem ad nares discretionis nostrae seu ad olfactum nostrum pervenit, et defertur. Isto ergo si bonus, fuerit, delectamur, et exemplo ad benefaciendum inducimur, et confortamur, si vero malus fuerit, coturbamur, et aliquum ex tali exemplo inficimur, et gravamur.* Pierre Bersuire, *Reductorium morale super totam bibiam* (Venice: Scotto, 1583), I.9, 12.
- 46 *Ibid.*, II.11, 35.
- 47 *Ibid.* Isidore does not mention discretion when he gives his etymology of *nares*, nor does Bartholomew. Pierre's interpretation of Isidore to mean discretion as well as knowledge is an example of the strength of the nose of discretion metaphor by the fourteenth century. Isidore of Seville, *Etymologies*, VI.1.47, 234; Isidore of Seville, *Etymologiarum*, VI.1.47; Bartholomew, *De proprietatibus rerum*, V.13, 141.
- 48 Bersuire, *Reductorium morale*, II.11, 35; cf. Thomas the Cistercian, *In Cantica Cantorum*, in PL 206, col. 718.
- 49 Bersuire, *Reductorium morale*, II.11, 35.
- 50 *[A]jere frigidum tepidae affectionis pulmonem conscientiae.* *Ibid.*
- 51 *[F]aciei principium membrum.* *Ibid.*, 36.
- 52 *[T]otam faciem animae solet decoram facere, et ornamentum honestatis in tota superficie generare. Et sic animae potest dici illud Can. 7. Nasus tuus sicut turris libani.* *Ibid.*
- 53 *[T]otum corpus purgare et corrigere, et totam faciem ecclesiae adornare.* *Ibid.*
- 54 *[H]odie ecclesia in multis locis videatur tali naso et tali ornamento privata, et turpiter detruncata.* *Ibid.*
- 55 *Odor potest mihi significare famam, quae scilicet de substantia, id est, de vita et de moribus hominum dissolvitur, et mediante aere, id est, vicina circumstante ad nares aliorum defertur.* Bersuire, *Reductorium morale*, XIII.7, 587.
- 56 *[C]alor charitatis quae hominem inflammet, vapor virtutum, qui exterius exhalet, aer bonae uicinae quae odorem famae ad alios portet, et nervus cordis aliorum bene dispositus, qui odorem istum recepit, et de eo discrete iudicet.* *Ibid.*

- 57 Ibid.
- 58 *Humores enim id est affectiones, quando in anima corrumpuntur, tunc tota substantiae vitae putrefit, et inficitur, et sic necessario exhalat fetidus, infamiae fumus, quo gravatur aliorum olfactus et auditus.* Bersuire, *Reductorium morale*, XIII.8, 588.
- 59 *[I]nfictis verbis et virtutibus.* Ibid.
- 60 *[N]am statim quod calor concupiscentiae solet insurgere, isti per mali desideria resolvuntur, ita quod pori affectuum aperiuntur, corrupti fumi, id est, corrupta dicta et facta evaporantur, et sic odor famae, qui apparuerit, perditur, et foetor infamiae, qui latuerat sub constrictione, abstinenciae, omnibus delcaratur.* Ibid.
- 61 *[S]olent quandoque anhelitum et flatum fetidorum verborum emittere, fumum vanarum ostentationum ostendere, et foetorem luxuriosae vitae et infamiae taliter diffundere, quod omnes alios circumstantes solent corrumpere, et ad peccatum inducere, et mortem culpa et poenae in eis generare.* Ibid., 589.
- 62 *[Q]uia pro certo quando fama, verba et opera sunt foetentia, necesse est quod aliis sunt periculosa et nocentia.* Ibid.
- 63 Ibid.
- 64 *[O]doratus discretionis et devotionis spiritualis ... in laicis quam ecclesiasticis, et simplicibus quam in sapientibus.* Bersuire, *Reductorium morale*, I.9, 12.
- 65 Bersuire, *Reductorium morale*, XIII.7, 587.
- 66 Ibid., 587–88.
- 67 *[O]lfactus imaginationibus nostrae.* Bersuire, *Reductorium morale*, XIII.7, 587.
- 68 Ibid.
- 69 *[S]apientiam et devotionem devorat, faciem conversationis dehonestat, nervos discretionis sensus obturat, intantum quod polyposus vel luxuriosus foetorem suae propriae infamiae non percipit nec cogitat, et inter foetorem luxuriae et odorem castimoniae, non discernit aut iudicat.* Bersuire, *Reductorium morale*, IV.13, 95.
- 70 Ibid.
- 71 *[D]eformitas verborum et locutionum.* Ibid.
- 72 Ibid.
- 73 Ziegler, *Medicine and Religion c. 1300*, 44.
- 74 Ibid., 201.
- 75 *Exteriores enim sunt visus, auditus, gustus, odoratus, et tactus: qui sensus omnes mystice competunt praelatis, scilicet visus contemplationis, auditus confessionis, vel consultationis gustus divini amoris, quo anima spiritualium deliciarum saporem percipit, odoratus discretionis, et tactus boni operis.* Giovanni da San Gimignano, *Summa de exemplis et rerum similitudinibus locupletissima* (Lyons: Beraud, 1585), VI.60, 171r–v. Ziegler used the Antwerp 1583 edition, while Heather Webb used the Venice 1548 edition. Since there does not seem to be agreement on which edition should be used, I chose the Lyons 1585 edition, which is available online in a clear, easy-to-read scan.
- 76 Ibid., VI.61, 173r.
- 77 Ibid., 173v.
- 78 Ibid. See also Chapter 2 of this book, especially the opinions of Jean Buridan, who was contemporary with Giovanni.
- 79 Giovanni da San Gimignano, *Summa de exemplis*, VI.61, 173v.
- 80 *[O]dores ... diligendo, fetores vero horrendo, et hoc est, quia odoribus tanquam corruptentibus impeditur.* Ibid.
- 81 *Est autem verum intellectui, sicut res odorifera odoratui.* Ibid., VI.66, 176v.
- 82 *[R]eprimere et expellere excessus, et extrema vitiorum ... speculativa spiritum attrahit, idest spiritualem, et intellectualem perfectionem.* Ibid.

- 83 [*S*]cientiis resolutivis sive demonstrativis. Ibid.
- 84 [*P*]er scientiam homo honestatur, et ornatus, et honorabilis redditur. Ibid.
- 85 Ibid., 176v–177r. Quotation from 177r.
- 86 Ibid., I.66, 38v; VI.60, 172v.
- 87 Ibid., I.66, 38v.
- 88 [*Q*]uia fumus est fetorum delativus. Ibid., 39r.
- 89 Ibid.
- 90 Bersuire, *Reductorium morale*, X.34, 384.
- 91 [*V*]irgines assimilantur violis, quae sunt frigidae, aquosae, et odoriferae. Sunt enim virgines frigidae a concupiscentia carnis, aquosae per lachrymas devotionis, odoriferae per exempla honestatis. Et nota quod viola suo odore cerebri caliditatem mitigat, spiritum animale confortat, et somnum provocat. Sic virginitas suo odore ardorem carnis refrigerat, spiritum confortat, et recreat, et ad somnum, id est, quietem contemplationis disponit, et praeparat. Giovanni da San Gimignano, *Summa de exemplis*, III.80, 98v.
- 92 Ibid., 98v–99r.
- 93 Item nares eis pictores attribunt, quia peccata velut foetida fugiunt, et virtutes quasi quaedam odorifera diligunt, et inter munda, et immunda foetida et aromatica sagacissime diiudicant, et distinguunt. Giovanni da San Gimignano, *Summa de exemplis*, VI.6, 145. Bersuire also describes the senses of angels. In keeping with his cohesive explication of spiritual smell, he links the nose more specifically with discretion and judges than Giovanni does. Bersuire, *Reductorium morale*, I.2, 5.
- 94 Heather Webb, “Catherine of Siena’s Heart,” *Speculum* 80, no. 3 (2005): 804–05.
- 95 Gallacher, ed., *The Cloud of Unknowing*, ll. 1914–22.
- 96 Ibid., ll. 1936–37.
- 97 Ibid., ll. 1937–40.
- 98 “For he enflaumeth so the ymaginacion of his contemplatyves with the fiire of helle, that sodenly, withoutyn discrecion, ... with-outen any avysement thei wil take apon hem to blame other mens defautes over sone. And this is for thei have bot o nose-therel goostly. For that staunson that is in a mans nose bodely, and the whiche departeth the to nose-therel fro the tother, bitokeneth that a man schulde have discrecion goostly, and kun dissevre the good fro the ivel, and the yvel fro the worse, and the good fro the betyr, er that he gave any ful dome of any thing that he herde or sawe done or spokyn aboute hym.” Ibid., ll. 1944–52.
- 99 Ibid., ll. 1953–54.
- 100 Ibid., ll. 1933–37.
- 101 Hans Aili, “Alfonso’s Editorial Work in the *Liber ad reges*: A Pitfall for Vernacular Translators?” in Morris and O’Mara, *The Translation of the Works of St Birgitta of Sweden into the Medieval European Vernacular*, 25; Bridget Morris and Veronica M. O’Mara, Introduction to Morris and O’Mara, *The Translation of the Works of St Birgitta*, 10.
- 102 Bridget Morris and Veronica M. O’Mara, Introduction to Morris and O’Mara, *The Translation of the Works of St Birgitta*, 1–2, 11–12.
- 103 Birgitta of Sweden, *The Revelations of Saint Birgitta of Sweden*, Vol. 1, trans. Denis Searby (Oxford: Oxford University Press, 2006), 89; *Ille talis videtur hominibus quasi homo bene ornatus, fortis et decorus et in pugna domini sui strenuus sed, amota galea a capite eius, est abhominabilis ad videndum et inutilis ad operandum* (Birgitta of Sweden, *Sancta Birgitta Revelaciones I*, ed. Carl-Gustaf Undhagen (Stockholm: The Royal Academy of Letters History and Antiquities, 1977), I.23).

- 104 Birgitta of Sweden, *The Revelations*, trans. Searby, I.23, l. 6, 1:89–90; *Nasus eius absconditus est, quia discretio ablata est ab eo, qua discernat inter peccatum et virtutem, inter honorem temporalem et eternum, inter diuicias seculi et eternas, inter delectaciones istas modicas et eternas* (Birgitta of Sweden, *Revelaciones*, I.23, l. 6).
- 105 Gallacher refers to a Middle English manuscript of Birgitta's text that reads similarly: "His nose is cutt awai for all discrecion is taken fro him, bi the whilke he suld deme bitwene sin and vertue." Qtd in *The Cloud of Unknowing*, ed. Gallacher, note on ll. 1936–37.
- 106 Birgitta of Sweden, *The Revelations*, trans. Searby, IV.52, l. 10, 101; Birgitta of Sweden, *Revelaciones*, IV.52, l. 10.
- 107 Birgitta of Sweden, *The Revelations*, trans. Searby, IV.52, l. 19, 102; *sicut per nares suavis odor ad cerebrum delectabiliter trahitur, ut cerebrum inde fortificetur* (Birgitta of Sweden, *Revelaciones*, IV.52, l. 19).
- 108 Bernard McGinn, *The Flowering of Mysticism: Men and Women in the New Mysticism (1200–1350)*, *The Presence of God: A History of Western Christian Mysticism* 3 (New York: Crossroad, 1998), 245–46; n. 251, 438.
- 109 Marguerite Porete [Margaret Porette], *The Mirror of Simple Souls*, ch. 60, trans. Edmund Colledge, J.C. Marler, and Judith Grant (Notre Dame: University of Notre Dame Press, 1999), 80. This edition translates from the French version and notes variations in the Latin and English texts.
- 110 *Si ergo de pane fit corpus Christi, oportet quod in pane fiat alteratio: omnis autem alteratio est mutatio secundum qualitatem: igitur oportet, quod qualitates panis non maneant, quae sunt color et figura, sapor et odor, quod est contra sensum: quia omnia haec manere videmus in sacramento*. Albertus Magnus, *De corpore domini*, VI.2.1, in *Opera Omnia*, Vol. 38, ed. Borgnet (Paris: Vives, 1899), 372. Albertus discusses the same qualities several times throughout the chapter (364–85).
- 111 Porete, *The Mirror of Simple Souls*, ch. 15, 33.
- 112 Catherine of Siena, *The Dialogue*, ch. 93, trans. Suzanne Noffke (New York: Paulist Press, 1980), 171.
- 113 *Ibid.*, 172.
- 114 *Ibid.*, 173.
- 115 Catherine of Siena, *The Letters of Catherine of Siena*, Vol. 2, trans. Suzanne Noffke (Tempe: Arizona Center for Medieval and Renaissance Studies, 2001), letter T197/G268, 429.
- 116 *Ibid.*, 431.
- 117 Catherine of Siena, *The Dialogue*, ch. 6, 35.
- 118 *Ibid.*, ch. 14, 52.
- 119 *Ibid.*, ch. 22, 59.
- 120 *Ibid.*, ch. 119, 223.
- 121 *Ibid.*, ch. 119, 224.
- 122 *Ibid.*, ch. 125, 243.
- 123 Catherine of Siena, *The Letters*, letter T24/G44/DT10, 2:156.
- 124 Catherine of Siena, *The Dialogue*, ch. 124, 237.
- 125 *Ibid.*, ch. 124, 238.
- 126 *Ibid.*
- 127 *Ibid.*, ch. 124, 239.
- 128 *Ibid.*, ch. 142, 295.

129 Ibid., ch. 163, 354.

130 “Sumtyme sche felt swet smellys wyth hir nose; it wer swettyr, hir thowt, than evyr was ony swet erdly thyng that sche smellyd befor, ne sche myth nevyr tellyn how swet it wern, for hir thowt sche myth a levyd therby yf they wolde a lestyde.” Margery Kempe, *The Book of Margery Kempe*, ed. Lynn Staley, TEAMS Middle English Texts Series (Kalamazoo: Medieval Institute Publications, 1996), I.35, ll. 2239–42.

131 “[S]che felt a wondyr swet savowr and an hevynly that hir thowt sche myth a levyd therby wythowtyn mete or drynke yf it wolde a contynuyd. And in that tyme owr Lord seyde unto hir, ‘Dowtyr, be this swet smel thu mayst wel knowyn that ther schal in schort tyme be a newe priowr in Lynne, and that schal ben he wech was last remownd thens.’” Ibid., I.71, ll. 4056–60.

132 See Chapter 3 86–92.

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Conclusion

Certain odors

Ancient, medieval, and modern scholars sometimes refer to the uncertain, ephemeral, invisible, and intangible nature of odors as an obstacle to human understanding of them. For example, in his excellent study of sensory experience in late medieval England, C.M. Woolgar echoes Aristotle when he asserts that smell is exceptional among the senses because odors cannot be described except by comparison to objects (e.g., rose-like odors) or flavors (e.g., sweet odors). He further complicates the study of smells by pointing out that, since no medieval odors are or could ever have been preserved, “we are entirely dependent on written descriptions for our information about the sense and its operation.”¹ As we saw in the first chapter, most of these ideas are conventions in discussions of the sense of smell that go back to Plato and Aristotle. They also reflect the nineteenth-century devaluation of smell, which Alain Corbin examined over thirty years ago.²

Aristotle may have limited odors to good, bad, or flavor-related names, but there are a variety of descriptive terms that both premodern and modern people use for odors that are not always related to flavors or easy to categorize into one of the two extremes, such as heavy, light, floral, chemical, woody, or grassy. While most of these are comparative descriptions, smell is not the only sense that resorts to comparison to describe its sensations. Woolgar notes that medieval color vocabulary, which was much more limited than its modern counterpart, grew through comparison with other objects. The color word “orange,” for example, is a comparison to the fruit. The earliest use of orange as a color name dates to the sixteenth century, while English-language references to the fruit date from the fifteenth century.³ Medieval scholars were, in fact, far from certain about color names, a problem stemming from both translation and the need for precision in naming the colors of objects such as bodily fluids. Katherine H. Tachau shows that not only did medieval scholars translate Greek color words in various ways but they also recognized the problem of translating correctly.⁴ Rather than accepting Aristotle’s limited number of seven (or eight) primary colors, medieval scholars and doctors often expanded them.⁵ They frequently gave colors comparative names, including ultramarine (*lazurium*, lapis-lazuli-colored) for blue, saffron (*croceus*) and citrine or lemon (*citrinus*) for yellows, and wine (*vinosus*) or ruby (*rubeus*) for

reds.⁶ Furthermore, a specific, non-comparative word for a sensation does not lead to certainty: while there may be variations in opinions about whether an object is yellow, red, or orange, there is also inconsistency in naming objects blue or purple. Finally, historical examination of every sense faces the same problem as smell of reliance on texts for interpretation. Even if a sense left artifacts behind, texts are vital to a full understanding of medieval thinking, because the significance of sensory objects is cultural. For example, even if artworks have been preserved in exactly their medieval condition, our eyes will not see them as medieval eyes saw them. For all of these reasons, it is time to stop speaking of odor as something beyond description that, once dissipated, can never be recaptured and instead to examine the traces of scent left in sources as the sources themselves speak of them.

Medieval scholastic thought attributed significance, specificity, and certainty to the information provided by the olfactory sense. Odors provided certainty because they were so, as it were, black and white. Since humans could only perceive extreme odors, there was little room for uncertainty. Furthermore, far from undermining the usefulness of olfaction, the similarity of odors to flavors opened the way for using odors to determine the qualities of medicines and bodily fluids. Odors were certainly not infallible—just as any sense object was not infallible—but once the nature, abilities, and limitations of odors were understood, odor could reveal valuable information about the nature of a medicine, a person's health, or a supernatural being. Odors balanced complexions, manipulated organs, and healed bodies in the natural world, and they communicated the presence and will of God in the supernatural world. A doctor perceiving the physical odor of musk was certain that it was hot and dry in the third degree, and when a saint smelled the odor of a lily in a room empty of flowers, she was certain that it was the odor of God. Bad odors were certain signs of putrefaction and illness as well as causes of them. They announced the qualities of sinners' souls and accompanied demonic presence. Additionally, while odors themselves were invisible and intangible, signs of odors were frequently visible and sometimes tangible, such as the smoke of incense, the pomanders carried by the wealthy, and the everlasting symbols of odor that appeared in works of art, such as saints with flowers and angels with censers.

Although the topic of smell in the central and late Middle Ages might seem like a narrow one, this work has touched on many more aspects of medieval life than only the odor of sanctity or the opinions of Aristotle. The standard scholastic account of the sense of smell had various roots but was largely drawn from the explanations of Avicenna and Haly Abbas that blended Galen, Aristotle, and original Arabic-language thought on the olfactory sense. Far from abandoning the topic once the standard account of the sense organ and the nature of odor had hardened in the thirteenth century, scholars and physicians turned to the powers of odors, giving abstract theories practical applications. The abilities of odors as understood and used by physicians led to concrete changes in medieval cities to prevent disease, and the arrival

of the plague in Europe in 1348 ensured that urban dwellers, at the least, were aware that the smoke, fume, or vapor of bad odors coming from refuse, stagnant water, or the air was dangerous to their health.

Scholastic philosophy and medicine also influenced theology. Christian olfactory theology had included awareness of the physical nature of the sense from the beginning, but starting in the twelfth century, scholastic theologians gave spiritual interpretations to olfaction as it was newly understood. Often, they were the same authors who had written on the sense of smell without reference to religion, which resulted in theology receiving the same expert information as non-religious scholastic writing. The new medically aware theology of smell informed Latin-language biblical commentaries, mysticism, and other works of theology. From these genres, it filtered into some of the most popular late medieval preaching texts, including both exempla collections and model sermons. Finally, the reflection of spiritualized scholastic philosophy is evident in vernacular mystical works. Although, just as with non-religious knowledge of olfaction, popular audiences may not have had a firm grasp on every aspect of scholastic spiritual smell, the evidence of preaching texts and vernacular literature suggests that they likely knew the basics.⁷

This book is by no means an exhaustive study of thought about the sense of smell or the practical uses of olfactory theory. In outlining scholastic olfactory theory, it has touched on the histories of medicine and urban cleanliness, including general medical treatment, sexual health, and precautions against the plague. Viewing these aspects of medieval history with olfactory theory in mind has, I hope, illuminated some aspects of them and suggested avenues of further research to specialists in those areas. Furthermore, while I have ended this work at the traditional endpoint of the Middle Ages, scholastic smell theory informed early modern smell theory. I suggested the continuity of European thought in Chapter 3, when I noted the use of scholastic terminology for the olfactory sense organs into the seventeenth century, even after Vesalius had dismissed the possibility that what medieval doctors called the olfactory breasts were the actual olfactory organs.⁸ A detailed examination of early modern smell theory that takes medieval smell theory into account may demonstrate that there was a European olfactory theory ranging from at least the time of Galen through the nineteenth century that attributed disease-healing and -causing powers to odors.

Ancient and scholastic opinions regarding smell and animals is another fruitful area of research that I was not able to address in this work. Snakes were commonly considered to be both attracted and repelled by odors.⁹ Vultures and other birds, especially birds of prey, were thought to have a better sense of smell than humans and even symbolized the sense of smell in artworks. Dogs were another animal with a powerful sense of smell that often formed part of scholastic and popular discussions of smell. Aristotle asserted that horses aborted at the scent of an extinguished candle and that female partridges could conceive by the smell (or voice) of the male.¹⁰ Similarly, an ancient tradition that certain horses conceived by the wind, found in book

eight of Pliny's *Historia naturalis*, survived into the medieval period and was often linked with odor.¹¹ Albertus Magnus repeated much of this lore in his book on animals.¹² An examination of medieval thought about the olfactory senses of animals would deepen our understanding of the nature and powers of odors.

The theology of smell between the eighth and fifteenth centuries also deserves a book-length study in its own right. A study of olfactory theology would no doubt unearth further examples of the influence of scholastic theories of smell on both Latin and vernacular religious thought. Both religious and medical thinking about smell would also be illuminating on another aspect of olfactory theory that there was little space to include in the current work: the odors of social groups. As I noted briefly in Chapter 5, Jews and heretics were considered to be spiritually fetid. Jews were also thought to exude a physical stench, and that reputation may have contributed to the complaint about the stench of the sewage coming from the Jewish Quarter in Barcelona that we saw in Chapter 4.¹³ Similarly, lepers were isolated from other parts of the community since leprosy was a disease that could be communicated by the odor of the sick or the smell of their breath.¹⁴ The current work should provide some useful background to studies of odors in medieval social thought.

I have argued, in direct opposition to traditional European descriptions of odors as elusive and indefinable, that central and late medieval concepts of olfaction were precisely laid-out theories that have been well preserved throughout philosophical, medical, theological, and popular works. The nature of odor is the key to the physical powers of odors, which were extremely important in medieval medical thought. Far from remaining in Latin texts on the shelves of university libraries, educated theory was used for the benefit of society in general, which led to basic popular knowledge of olfactory theory. Its incorporation into theology enhanced popular understanding of the latest science on the sense of smell. I hope this study will spark continued discussion of odor as it was understood by medieval culture—as an invisible and intangible but certain sign.

Notes

- 1 C.M. Woolgar, *The Senses in Late Medieval England* (New Haven: Yale University Press, 2006), 117.
- 2 Alain Corbin, *The Foul and the Fragrant: Odor and the French Social Imagination* (Cambridge, MA: Harvard University Press, 1986).
- 3 Woolgar, *The Senses in Late Medieval England*, 155–56, 158.
- 4 Katherine H. Tachau, “Scholastics on Colors in the Mind, Colors in the World,” in *Forme e oggetti della conoscenza nel XIV secolo: Studi in ricordo di Maria Elena Reina*, *Micrologus*’ Library 61, ed. Luca Bianchi and Chiara Crisicani (Florence: SISMEL, 2014), 350–53.
- 5 *Ibid.*, 354–56; Woolgar, *The Senses in Late Medieval England*, 156.
- 6 Tachau, “Scholastics on Colors,” 352, 360, 363.

- 7 Such basic knowledge of scholastic sensory theory among popular audiences has also been identified for vision. A. Mark Smith argues from sermon, literary, and artistic evidence that non-Latinate audiences had “optical literacy,” a basic familiarity with optical theory. See A. Mark Smith, *From Sight to Light: The Passage from Ancient toward Modern Optics* (Chicago: University of Chicago Press, 2014) ch. 7, esp. 287ff.
- 8 See Chapter 3.
- 9 Paul Freedman cites a few examples in “Spices and Late-Medieval European Ideas of Scarcity and Value,” *Speculum* 80, no. 4 (2005): 1209–27.
- 10 Aristotle, *History of Animals*, V.5, in *The Complete Works of Aristotle*, Vol. 1, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), 855; VIII.24, 944.
- 11 Alain of Lille, *Anticlaudianus*, bk. 4, ll. 138–58, ed. R. Bossuat (Paris: Librairie Philosophique J. Vrin, 1955), 111.
- 12 Albertus Magnus, *De animalibus*, in *Opera Omnia*, Vol. 11, edited by Borgnet (Paris: Vives, 1891). A good partial edition and translation is Albertus Magnus, *Man and the Beasts (De animalibus, books 22–26)*, trans. James J. Scanlan (Binghampton: Medieval and Renaissance Texts and Studies, 1987).
- 13 See Chapter 4. See also Francesca Matteoni, “The Jew, the Blood and the Body in Late Medieval and Early Modern Europe,” *Folklore* 119, no. 2 (Aug. 2008): 190; Constance Classen, “The Odor of the Other: Olfactory Symbolism and Cultural Categories,” *Ethos* 20, no. 2 (Jun. 1992): 134, 159.
- 14 Carole Rawcliffe, *Leprosy in Medieval England* (Woodbridge, UK: Boydell, 2006), 90–95, 133–42. See also Luke Demaitre, *Leprosy in Premodern Medicine: A Malady of the Whole Body* (Baltimore: Johns Hopkins University Press, 2007).

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